

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Examinations have over the years become one of the basic features of the school system. It is used as one of the important indices upon which most decisions about the learner are based. Examinations have been used to motivate teachers to teach and students to learn in the school system, thereby contributing to the enhancement of the quality of education in schools (Asuru, 2010). Examination is the assessment of the examinees' performances or behaviour when confronted with a series of questions, problems, tasks or situations in order to ascertain the amount of knowledge, skills, attitudes or other behaviour that he has acquired and the extent to which he is able to utilize them or their quality and effectiveness. Examination is the most comprehensive form of assessment typically given at the end of the term to evaluate students' performances in schools. It is essentially achievement tests which comprises samples of questions or activities that reflect a large body of knowledge and mental process associated with an academic subject area.

An examination may be administered formally or informally, they could be standardized or unstandardized and the scores may be interpreted with regard to a norm or criterion. The objectives of most secondary schools examinations according to Wasanga and Ramani (2010) are to: measure the effectiveness of the teaching and learning process; measure students' present levels of achievement; provide information for streaming purposes; evaluate the relevance of the curriculum; measure progress towards the accomplishment of national goals and; provide valuable input for policy decisions on educational reforms and renewals. La-Celle (2000) describes State Unified Examinations (SUE) as examinations that are composed, administered and scored in the same manner for everyone taking them. Each test taker receives the same examination in the same format

and is given the same materials and amount of time to complete it. It is designed for use with a large number of students. An individual student's score is compared to the average performance by the group. Unified examinations offer diagnostic aid to students by identifying students' strengths and weaknesses and also provide a benchmark with their peers. It makes it possible to make an objective determination of knowledge status since in order to respond to the test items, it is necessary to know specific materials.

According to Rudner and Schaffer (2002), proponents of unified examinations pinpoint the value of having a common basis for comparing individuals, schools and district performances; the importance of specifying content and performance targets to encourage high aspirations and achievements and the potential motivating effects of tests if results are linked to hiring and schools' admission decisions. These researchers equally identified sources of error and factors in examinations to include: effectiveness of the distracters in the multiple choice tests; generalization from the collection of items to a broader domain; multiple correct answers; partially correct distracters and difficulty of the items relative to the students' abilities.

Factors affecting students in taking examinations could include changes in such things as students' attitude, health and related problems which may affect the quality of students' efforts and thus their test taking consistency; therefore, students tend to make careless errors, misinterpret test instructions, forget test instructions, inadvertently omit test sections and misread test items.

Factors inherent in the scoring of the examination include clarity of the scoring rubrics in theory questions; clarity of what is expected of the students and ratters' errors. These ratters' errors could be that:

1. Ratters are not always consistent, they sometimes change their criteria while scoring;

2. Ratters are sometimes subject to biases such as halo effects, stereotyping, perception differences, leniency or stringency errors and;
3. Scale shrinkage. (Rudner and Schaffer, 2002).

Wasanga and Ramani (2010) note that examinations help to measure the magnitude of the interpretation and implementation of the curriculum. In the same vein, Ferrer (2006) found significant positive relationship between assessment instruments and the educational expectations or goals a country has adopted through its national curriculum. The Nigerian National Educational Research and Development Council (NERDC) is charged with the co-ordination of curriculum development efforts for primary and secondary school curricula. The curriculum has the following major components: topics, contents, objectives, teachers and pupils' activities and evaluation. It is on these documents that examinations syllabi are based.

Bello, Kolajo and Uduh (2010) view examination as a tool for measuring and judging the standard of education in any country. While Alade (2002) asserts that a common yardstick used in measuring the quality of education offered by a school is the performance of its students in public examinations. She opines that the quality of education touches on the educational structure itself, the curriculum, teaching methods and the teachers. In addition to this, Adebule (2005) views the standard of the quality of education like relevance of education varies from one educational system to another; it cannot be completely divorced from the objectives set out for education in any nation, based on the needs of the people. He further asserts that the lack of quality in our educational system is what we term "Falling Standards in Schools". Afemikhe (2003) asserts that quality in education as multifaceted and encompassing how learning is organized and managed, content of learning outcomes and the totality of the environment in which education takes place.

The Lagos State Government through its Ministry of Education began the implementation of the Unified Examinations programme for its public secondary schools in the year 2001 through a policy decision (Unified Examinations Policy Paper, Lagos State Ministry of Education, 2010). The objectives of implementing the programme are to:

1. Bring about uniformity in students' assessment in the state through the provision of unified examinations, unified scoring schemes and conference marking.
2. Increase the quality and standard of education in the state by providing uniform promotion criteria.
3. Ensure the completion of the schemes of work in the various subjects and thus ensure full curriculum implementation through the provision of uniform subject schemes.
4. Improve on the attitude and attendance at school of both teachers and students in the public schools.
5. Consistently improve on students' performances in external examinations.
6. Improve on the teaching skills of teachers through regular training and provision of instructional materials. (Unified Examinations Policy Paper, Lagos State Ministry of Education, 2010).

The unified examinations are expected to bring about uniformity in the assessment of students in the State owned secondary schools through the use of uniform subjects' schemes of work, conference marking and uniform scoring and promotion criteria. This is to allow for orderliness, organization and cohesion in the way examinations are conducted in these schools and by so doing, improve teachers' teaching skills and students' academic performances. This approach is expected to impact positively on the quality and standard of teaching and learning in the State which should, by extension, bring about an improvement in the performances of students in internal as well as

certifying examinations like the Basic Education Certificate Examinations (BECE), West African Senior Secondary Certificate (WASSCE), and National Examination Council (NECO) examinations. The examinations are also intended to compel the teachers to cover the subjects' schemes of work and thus ensure full curriculum implementation.

Prior to the introduction of the unified examinations programme in the Lagos State public secondary schools, individual teachers in each school set questions and marked the students' answer scripts for the terms' examinations internally at all levels in the public secondary schools. The practice did not allow for uniformity of standards as the teachers worked at their own pace and non – completion of subjects' schemes of work were the order of the day. This gave room for favouritism, examination malpractices and examination leakages. The resultant effects of these were students' poor attitude to schooling and poor results in external examinations (especially in Chemistry and Mathematics) as shown in Table 1 below;

Table 1: Chemistry and Mathematics Performances of Lagos State Public Secondary Schools' Students in the May/June West African Examinations Council (WAEC) Senior Secondary School Certificate Examinations(2001 – 2014).

YEAR	CHEMISTRY(% A1 – C6)	MATHEMATICS(% A1-C6)
2001	39.74	40.12
2002	31.60	32.58
2003	44.98	30.57
2004	24.44	17.59
2005	30.26	21.01
2006	27.48	19.82
2007	18.93	15.36
2008	35.08	21.09
2009	32.09	30.52
2010	28.14	18.42
2011	33.77	17.78
2012	36.33	47.00
2013	69.37	53.80
2014	46.11	43.41
Ave.%	35.59	29.22

Source: WAEC (2001- 2014), Research Division, Lagos

From Table 1, it can be seen that there has not been consistent improvement in the performances of the Lagos State public secondary schools students in external examinations in Chemistry and Mathematics during the period under review (2001- 2014). This is not in congruence with one of the key objectives of implementing the unified examinations programme in the state which is to consistently improve on students' performances in external examinations. This therefore calls to question whether or not the unified examinations programme is actually meeting the aspirations of the Lagos State Government, in terms of providing quality uniform assessment procedures in the public secondary schools that could bring about remarkable improvement in the attitude of teachers and students to school and schooling, full curriculum implementation and better performances of the students in certifying examinations like WASSC and NECO examinations.

The practice is that “experienced examination officers” in the Basic Education Service (BES) Department of the Lagos State Ministry of Education, set examination questions in their areas of academic discipline. In subjects where they do not have “experienced examination officers”, “experienced subject teachers” from the State public secondary schools are requested to forward examination questions to the Basic Education Service (BES) Department of the Lagos State Ministry of Education (Lagos State Ministry of Education, 2010). These examinations questions are vetted by the Basic Education Service Department personnel and subsequently sent to the State Printing Press for printing. The examination questions are subsequently distributed to the various public secondary schools through the Education Districts. Examination scripts are then to be exchanged for marking between schools within an Education District. This is to allow for objectivity and to ensure that the marked scripts are promptly returned to the students to feed them back on their performances. It was assumed that the examinations would be properly supervised in each school.

Adeleke (2010) regards validity as the extent to which a test measures what it is supposed to measure. According to him, a test has construct validity if it measures what it purports to measure. In his view, a valid test is one that induces in the educational system, curricular and instructional changes which should foster the development of the cognitive skills that the test is designed to measure. Okoli (2000) defines reliability as the degree of consistency with which a test measures what it sets out to measure. It refers to the consistency of scores obtained by the same person when re-examined with the same test items on different occasions or with different sets of equivalent items or under other variable examining conditions. Reliability is influenced by many factors including the homogeneity of the items; comprising an assessment instrument, the length of the instrument, the nature of the candidates' population and the uniformity of the testing conditions. Low reliabilities undermine validity because it implies that a large proportion of the observed variability among scores is due to random error and consequently inferences made and actions taken based on these scores are likely to be problematic (Braun, Kanjee, Bettinger and Kremer 2006). This is because if a test cannot consistently measure what it purports to measure then it cannot be said to measure exactly what it sets out to measure.

Ojerinde and Kolo (2010) assert that no matter how perfect an examination is, its administration and supervision are crucial determinants of its success or otherwise. Supervision is a way of stimulating, guiding, improving, encouraging and overseeing certain group of people with the hope of seeking their co-operation in order for the supervisors to be successful in their task of supervision (Onasanya, 2011). Supervisors' attitude to supervision during examination administration plays a major role in determining the credibility of any examination. Pickens (2005) views attitude as a mind-set or a tendency to act in a particular way due to an individual's experience and temperament.

A supervisor with negative attitude to supervision will fail to follow the procedures and regulations in the guidelines which according to the researchers can lead to examination malpractices. The supervisors thus play the most crucial role because they take charge of every centre and supervise all the invigilators placed under them. Their roles include; Pre-examination sitting arrangement, examination administration, post examination activities such as; collation of answer scripts and dispatch of same to appropriate quarters, conduct of invigilators, attendants and the incidents of examination malpractices, how the examination materials were parcelled and when they are handed over to the custodians; used and unused answer sheets and question papers; attestation where the name, designation and signature of the supervisor is elicited. Wasanga and Ramani (2010) opine that monitoring should be carried out periodically during the administration of an examination for the purpose of auditing the authenticity of the exercise in terms of adherence to prescribed procedures.

Olatoye and Afuwape (2003) acknowledge that science constitute the axle on which the development and progress of both the individual and the nation depend. According to them, science is the activities which culminate into testable, falsifiable and verifiable body of knowledge. Among the basic sciences, chemistry occupies a unique position because it is a prerequisite for the study of many science courses such as Medicine, Biochemistry, Pharmacy, Laboratory Technology, Geology, and Agricultural Science among others. The National Chemistry Curriculum (2012) recommends the guided discovery approach for teaching the topics. This approach is to ensure that learners are provided with continuous experience in the skills of defining problems, recognizing assumptions, critical thinking, hypothesising, observing, collection and recording data, testing, manipulating variables and applying generalisations (Ihuarulam, 2008). Similarly, Adewale and

Amoo (2003) opine that the inclusion of mathematics as a core subject in the secondary school system may be an attempt by the policy makers to solve certain quantitative problems of daily life.

Public secondary schools also known as State secondary schools offer secondary education to children. They are funded by the government. There is usually compulsory students' attendance in these schools until a certain age or level; certification of teachers and curricula is done either by the government or by a teacher's regulatory organization and; also testing and standards are usually provided by the government through the Examination Boards (Durosaro, 2005). The West African Examinations Council (2012) listed the following as the functions of Examination Boards:

1. Maintaining examinations standards;
2. Providing guidelines for setting examination questions based on table of specification;
3. Drawing up markers from a pool of experienced school teachers in the relevant subject areas;
4. Developing marking scheme and formulating procedures to co-ordinate and moderate the examinations.

It has been observed that the unified examination programme in Lagos State public secondary schools is being handled by the Basic Education Service (BES) Department, a unit in the Lagos State Ministry of Education rather than by an examination body. This therefore calls to question whether or not the BES Department is adequately equipped, staffed and funded to carry out the functions of an Examination Board.

Grayson (2011) asserts that programme assessment is increasingly being used to meet the demand for information about the performance of public as well as private schools. According to him, a programme is a set of resources and activities directed towards one or more common goals,

typically under the direction of a single manager or management team. Reeve and Peerbhoy (2007) view assessment as the critical evaluation in as objective a manner as possible of the degree to which a service or its component parts fulfil stated goals or objectives. Similarly, Adebule (2005) sees assessment as the process of investigating the status of students, curricula, programmes and educational policy with respect to an expected outcome.

Junaid (2010) sees of the view that the assessment of any programme entails that a model should be employed as guide to its proper and appropriate assessment. Ilogu (2005) asserts that a model in programme assessment provides a conceptual framework for designing assessment studies. According to him, a model gives direction to an assessment design. He summarized the purposes of programme assessment to include; programme planning, improvement, implementation modification, funding and continued fund, accountability, accreditation, personnel improvement, and institutional survey, follow up studies and programme certification. So programme assessment can be formative, which is, taking place during the development of a programme with the intention of improving the value and effectiveness of the programme. It can also be summative, drawing lessons from a completed project that is no longer functioning.

The unified examination programme in Lagos State public secondary schools can be used to significantly improve classroom pedagogy, which can, in turn, lead to improvement in the quality and standard of education in the State if properly harnessed. The large number of candidates implies the need for better logistics, trained item writers, adequate scoring procedures and proper supervision. The unified examinations programme in Lagos State has been on since the year 2001 and there seems to be no record of any form of appraisal of the programme. Therefore it becomes imperative to conduct an assessment of its activities so as to be accountable to the public and to ascertain if the main objectives for setting up the programme are being achieved.

1.2 Statement of the Problem

The introduction of the unified examinations programme in the public secondary schools in Lagos State in the year 2001 tends to show that the Lagos State Government through the Ministry of Education took a proactive measure to check the incessant challenges prevalent in its public secondary schools' system which had led to poor academic performances of the students in public examinations. It is however worthy of note that, fifteen years after the implementation of the unified examinations programme in the State, there is still a general apathy to schooling and a perennial pattern of poor academic performances of the public secondary schools students in external examinations.

The situation that brought about the introduction of the Unified Examinations programme include the following: students' truancy in schools, lateness and irregular school attendance by staff and students, non-completion of the subjects' schemes by the teachers, hooliganism and gangsterism among students, teachers inability to account for students performances, inadequate and ineffective supervision of academic activities at the schools and District levels, hostile school environment, students' poor attitude to schooling, low confidence of parents in the public schools, late processing of school reports to parents, late feedback to the students, high failure rates in internal and external examinations and poor accountability by the educational system.

The current situation cannot be said to be completely meeting the original objectives of the Lagos State Government because there seems to be issues in the examination system; from item writing, administration, supervision, invigilation, scoring to collation and dissemination of results. This could be because the examinations papers/items may not have gone through the proper validation procedures. Thus the reliability and validity of the examination papers in terms of coverage of the

curriculum, selection of item writers, training of the item writers and examiners, scoring system and preparation of results might be questionable.

Comparability of students' scores in an examination is possible if uniform administrative and scoring procedures are used, it can thus be inferred that any inconsistency in the standard and process of generation of the unified examinations questions, administration, scoring and reporting of the examinations jeopardizes comparability of students' scores across the State in each subject and thus increases the risk of over dependence on the results of the examinations (which may not be true if the generation process is faulty). It is therefore necessary to assess the procedures of the unified examinations programme in Lagos State so as to find out the extent to which the objectives of the programme have been achieved: if the scoring and promotion criteria used by the schools are uniform across the six Education Districts, ascertain if the teachers in the public schools complete the subject schemes at uniform rates, ascertain if there are improvements in the school attendance and attitude of the teachers and students to school and schooling and whether there have been improvement in the standard of education in Lagos state public secondary schools as well as diagnose and document its strengths and weaknesses.

1.3 The Theoretical Framework

The research work was hinged on the following theories:

- Carol Weis's Theory of Change, 1995
- YjroEngestrom's Activity theory, 2000

Carol Weis Theory of Change (1995)

Weis(1995) defines theory of change as a theory of how and why an initiative works. It also seeks to improve how a programme is implemented. It is a systematic and cumulative study of the links

between activities, outcomes and context of the initiative or programme. This definition suggests that the steps towards assessing or evaluating a programme is to determine its intended outcomes; the activities it expects to implement to achieve those outcomes; the contextual factors that may have an effect on implementation of activities and their potential to bring about desired outcomes.

The following questions serve as guide in generating a theory of change:

1. What long term outcomes does the programme seek to accomplish?
2. What interim outcomes and contextual conditions are necessary and sufficient to produce those long term outcomes?
3. What activities should be initiated to achieve the outcomes?
4. What resources are required to implement the activities and maintain the contextual support necessary for the activities to be effective?

Therefore a programme assessment based on a theory of change identifies what to measure (ultimate and interim outcomes), the contextual conditions, activities and resources necessary to achieve the intended outcomes. The theory of change approach to programme assessment relies and uses many assessment methodologies that have been developed and refined over the years for information collection, measurement and analysis. The relevance of this theory to this research work is that it helps to keep the assessment of the unified examinations programme on track in terms of the contextual conditions of the unified examinations, the desired outcomes, resources available and the activities initiated to achieve the desired outcomes.

YjroEngestrom's Activity Theory (2000)

Engestrom(2000) defines activity theory as a theory for understanding collective processes undertaken in pursuit of some higher goal which can be used for appraising a programme. The theory emphasizes human action as the core in policy or programme implementation. The theory

depicts human activity as a system where learning and change happen through activity; mutually affecting subject and object. Activity theory is useful for understanding how a wide range of factors work together to impact an activity or programme. Activity systems are driven by:

1. Subjects: these are the people engaged in the activity and who share the goals.
2. Objects: this refers to the goal of the activity which is the problem the activity is directed and which is moulded and transformed into outcomes.
3. Action and operations: referring to processes and steps or micro-processes that lead to the objectives.
4. Outcomes: these refer to the results of the activity.

In order to reach an outcome it is necessary to produce certain objects (experiences, knowledge and physical products); Human activity is mediated by artefacts (tools used, documents, recipes etc.); Activity is also mediated by organization or community which may impose rules that affect an activity. An activity also features division of labour. Wethuizen and Basson (2011) listed the following as a guide in carrying out a programme assessment based on the activity theory:

1. What sort of activity are we interested in? (Activity).
2. Why is this activity taking place? (Objective).
3. Who is involved in carrying out this activity? (Subjects).
4. By what means are the subjects carrying out this activity? (Instruments/tools).
5. Are there any cultural norms, rules or regulations governing the performances of this activity? (Rules).
6. Who is responsible for what, when carrying out this activity and how are these roles organized? (Division of labour or roles).
7. What is the environment in which this activity is carried out? (Community).

8. What is the desired outcome of the activity? (Outcome).

The relevance of this theory to this study is that it facilitates the understanding of the core activities and resources available in the implementation of the unified examinations programme.

1.4 The conceptual framework

The study was guided by the Context, Input, Process and Product (CIPP) Model (Guba and Stufflebeam, 1970). This model is a comprehensive framework for guiding formative and summative appraisal of programmes, projects, products, personnel, institutions and systems. The model is configured for use in internal assessment by policy makers, individual service providers, project teams or mandated external evaluation (Stufflebeam and Shinkfield, 2008). It informs decision makers about the contexts, inputs, processes and products of the programme under assessment. It is based on the premise that the most important purpose of assessment is to improve a programme.

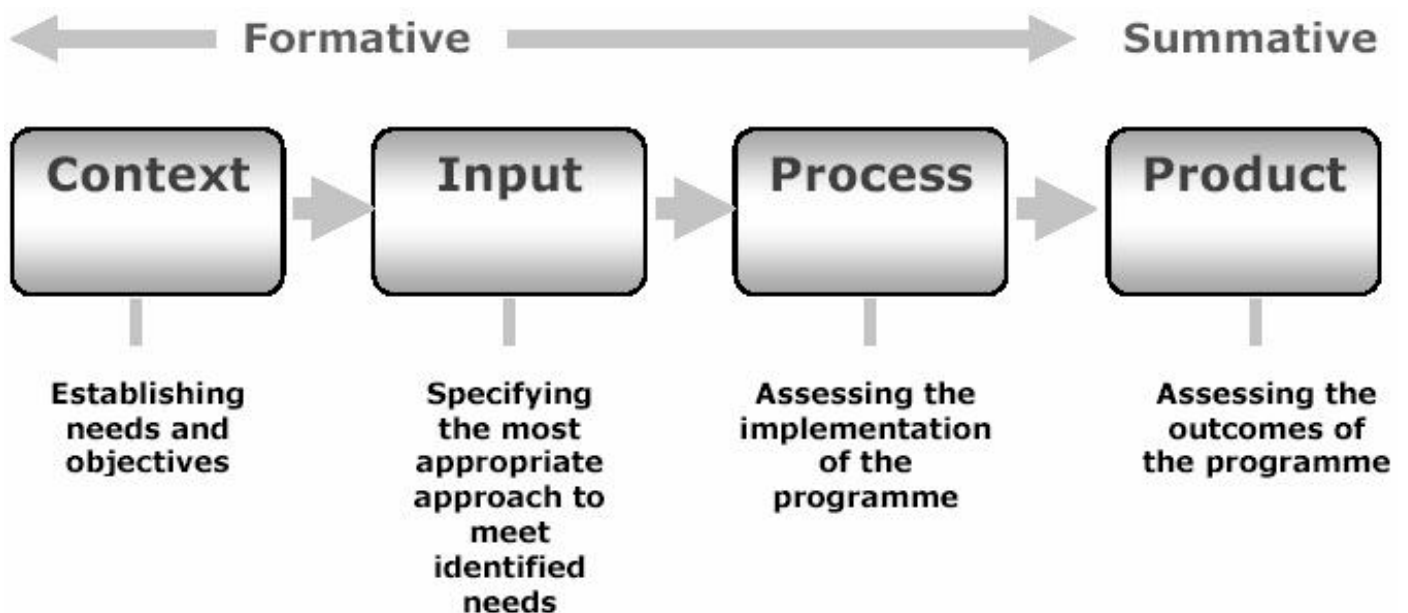


Fig. 1:TheContext, Input, Process and Product (CIPP) Model, Guba and Stufflebeam (1970).

The CIPP model as applied in this research;

- (a) The context variables: The context variables considered here were the needs and goals of the unified examinations programme hence the unified examinations programme personnel at the Ministry of Education (BES Department), unified examinations administrators variables like highest professional qualifications, years of working experience, years of supervising the unified examinations, gender, and training (if any) were determined. The quality of the unified examinations questions and the attitude of the teachers and students to the unified examinations programme were also assessed.
- (b) The input variables were composed of the resources put in place in order to achieve the stated goals of the programme: The unified examinations design, availability and adequacy of uniform examination procedures: unified schemes of work to ensure the completion of subjects' schemes; uniform scoring and promotion criteria were assessed here.
- (c) The process variables examined how the human and material resources were utilized to meet the goals of the programme. This consisted of the mode of administration, supervision and scoring of the unified examinations. The usage of unified subjects' schemes, conference marking, uniform scoring and promotion criteria for the examinations were also assessed.
- (d) The product variables reported on the extent of attainment of the unified examinations programme objectives in terms of uniformity in assessment procedures, curriculum implementation, improvement in the school attendance of both teachers and students (if any), comparability of mode of constructing the unified examinations questions with standard process of test items construction and the quality and standard of education in the public secondary schools in the State.

The CIPP model is relevant to this research work because it enabled the researcher to collect, analyse and present data which could be used by decision makers to determine the viability as well as possible ways of improving the unified examinations programme.

1.5 Purpose of the study

This purpose of the study was derived from the first five objectives of the Unified Examinations Programme. The study was basically designed to:

1. determine whether uniform criteria were used to score and promote students in the public secondary schools in the six Education Districts in Lagos State.
2. ascertain if there is any significant difference in the mode of administration and supervision of the Unified Examination papers in the public secondary schools in the six Education Districts in Lagos State.
3. find out the rate of teachers' completion of the chemistry subject scheme in the public secondary schools in the six Education Districts in Lagos state.
4. ascertain the school attendance patterns and attitude of the teachers to the Unified Examinationsprogramme in the public secondary schools in Lagos State.
5. Determine
- 6.
- 7.
8. the school attendance patterns and attitude of the students to the Unified Examinations Programmein the public secondary schools in Lagos State.
9. find out if the procedure for constructing the Unified Examinations test items adhere to the standard process guiding test items construction.
10. determine if the performances of students in unified chemistry examinations questions can significantly predict their performances in a chemistry achievement test.

1.6 Research Questions

The following research questions were used to guide this study:

1. To what extent do the public secondary schools use uniform scoring and promotion criteria in the six Education Districts in Lagos State?
2. What is the extent of uniformity in the mode of administration and supervision of the Unified Examinations papers in the public secondary schools in the six Education Districts in Lagos State?
3. What is the extent of uniformity in the rates at which the teachers complete the science subject schemes in the public secondary schools in the six Education Districts in Lagos State?
4. To what extent do the science teachers exhibit uniformity in their school attendance patterns and attitude to the Unified Examinations Programme in the public secondary schools in the six Education Districts in Lagos State?
5. What is the extent of uniformity in the students' school attendance patterns and attitude to the Unified Examinations Programme in the public secondary schools in the six Education Districts in Lagos State?
6. To what extent do the procedures for constructing the Unified Examinations test items adhere to the standard process of test items construction?
7. To what extent will the performances of students in unified chemistry examination questions predict their performances in a chemistry achievement test?

1.7 Hypotheses

The following research hypotheses were postulated:

- 1a. There is no significant difference in the scoring criteria used in the public secondary schools in the six Education Districts in Lagos State.
- 1b. There is no significant difference in the promotion criteria used in the public secondary schools in the six Education Districts in Lagos State.

- 2a. There is no significant difference in the modes of administration of the unified examinations papers in the public secondary schools in the six Education Districts in Lagos State.
- 2b. There is no significant difference in the modes of supervision of the unified examinations papers in the public secondary schools in the six Education Districts in Lagos State.
3. There is no significant difference in the teachers' rates of completion of the chemistry subject schemes in the public secondary schools in the six Education Districts in Lagos State.
- 4a. There is no significant difference in the teachers' attitude to the unified examinations programme in the public secondary schools in the six Education Districts in Lagos State.
- 4b. There is no significant difference in the teachers' school attendance patterns in the public secondary schools in the six Education Districts in Lagos State.
- 5a. There is no significant difference in the students' attitude to the unified examinations programme in the public secondary schools in the six Education Districts in Lagos State.
- 5b. There is no significant difference in the students' attendance patterns in the public secondary schools in the six Education Districts in Lagos State.
6. There is no significant difference between the procedures for constructing the unified examinations test items and the standard process guiding test items construction in Lagos State.
7. There is no significant relationship between the performances of students in unified chemistry examinations questions and a chemistry achievement test.

1.8 Significance of the study

This study is significant because it would be beneficial to policy makers, school administrators, teachers, students and researchers. It would provide all stakeholders in Education in the State with empirical information on the extent to which the objectives of the Unified Examinations

programme in Lagos State are being met. The study would provide valuable assistance to the policymakers in the State in taking important decisions regarding continuing, restructuring or outright discontinuation of the Unified Examination programme. It would be of great assistance to policy makers in other states that have already adopted the unified examinations programme by avoiding the identified shortcomings of the programme. The findings of this study would help the administrators in the State Education Districts to analyse the performance and effectiveness of the Unified Examinations Programme so far. It could be used to monitor students' achievement over time to determine whether the quality of education is rising, falling or remaining constant. The study would also help students to improve on their learning strategies, involvement in learning tasks and their attitude to learning. This study would also serve as a reference to other researchers.

1.9 Scope and delimitation of the study

The study was limited to the unified examinations programme personnel at the Basic Education Service Department of the Ministry of Education, the unified examinations programme administrators (principals, vice principals and the programme personnel at the six Education Districts), heads of science department, SS2 science teachers, senior secondary school two (SS2) science class teachers and SS2 science students from forty eight public senior secondary schools in the six Education Districts in Lagos state, Nigeria. Chemistry is the main index for the study because the researcher taught the subject in Lagos State public secondary schools for over two decades and is aware of the lack lustre performances of the public secondary schools' students in the subject over the years therefore the desire to improve on students performances in the subject is paramount.

1.10 Operational definition of terms

For the purpose of this study, the following terms were operationally defined:

Achievement

This is the degree of attainment of students after a period of learning exercise. It is usually measured by tests or examinations in different subjects. It can also be described as the sum total of the entire child's activities and performances in school, measured through test scores by the teachers. In this research, achievement is the extent to which students in public schools in Lagos state have been able to master certain skills in science, and mathematics and their scores in achievement tests in these subjects.

Assessment Model

This refers to particular conceptions, approaches, methods and even theories for thinking about and / or conducting assessment or evaluations. The models or conceptual approaches are developed by evaluators to define the nature and purposes of the assessment they are conducting. In this research, assessment model is the tool used to describe the objects being assessed and to structure and guide actual assessment or evaluation procedures as well as to communicate the nature of these assessments.

Experienced Examination Officers/ subject teachers

These are officers who have the experience to handle confidential examinations matters at the Ministry of Education, Education Districts and the schools. In this research, experienced examination officers refer to those officers and teachers who have put in five years and above in the Basic Education Service unit of the Ministry of Education and the Lagos State teaching service.

Marking guide/ Scoring Rubrics

These are scoring schemes that are developed by teachers or other evaluators to guide the analysis of the products or processes of students' efforts. They are employed when a judgment of quality is

required. In this research, marking guide refers to the scoring rubrics that are used to score students' responses to the unified examinations test items to ensure uniformity in the scoring process.

Programme Assessment

This is the holistic examination of a programme including its environment, client needs, procedures and outcomes using systematic data collection and analysis procedures and recommendations for programme improvement. In this research, programme assessment refers to the assessment of the procedures of the unified examinations programme in Lagos State in order to ascertain the extent to which the objectives of the programme are being achieved.

Public Secondary School

This refers to secondary schools that are funded by the government and offer secondary education to all children of secondary school age (10 – 18 years). In this research, public secondary school refers to the Lagos State owned secondary schools.

Science students

These are students who offer science subjects in schools. In this research, it referred to senior secondary two (SS2) chemistry and mathematics students.

Science teachers

These are teachers who teach science subjects in schools. In this research, it referred to senior secondary school two subject teachers who teach chemistry or mathematics as first or second teaching subjects.

Science class teachers

These are the class teachers of science students who take their daily attendance and prepare their report sheets. In this research, it referred to senior secondary two science class teachers that marked the daily attendance of the SS2 science students in the classes.

Supervision

This is a combination or integration of processes, procedures and conditions that are consciously designed to advance the effectiveness of individuals or groups. It is an interaction between at least two persons for the improvement of an activity. In this research, supervision refers to the effective management of the unified examinations programme by the programme personnel (officers and administrators).

Unified Examination

This is examination that is designed to determine the degree of knowledge and proficiency exhibited by an individual in a specific area or a set of areas. In this research, unified examinations refer to the use of common instruments to assess students' levels of achievement in Lagos state public secondary schools.

Unified Examinations Programme Administrators

In this study, it referred to the principals, vice principals of the public secondary schools and the unified examinations programme personnel at the six Education Districts in Lagos State.

Unified examinations Programme Personnel

These are the workers who handle specific schedule in the Ministry of Education. In this study, it referred to the unified examinations coordinators at the Basic Education Service Unit at the Ministry of Education, Alausa.

ABBREVIATIONS AND ACRONYMS

ASUEQ: Administration and Supervision of Unified Examinations Questions

BECE: Basic Education Certificate Examinations

BES: Basis Education Services

CAT: Chemistry Achievement Test

LSME:Lagos State Ministry of Education

NERDC:Nigerian National Educational Research and Development Council

NECO: National Examinations Commission

PAQ: Programme Assessment Questionnaire

SAUEQ: Students' Attitude to the Unified Examinations Questions

TAQ: Teachers' Assessment Questionnaire

UECQ: Unified Examinations Chemistry Questions

WASSCE:West African Senior School Certificate Examinations

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review of literature was done under the following sub – themes;

- 2.1 Concept of unified State examinations
- 2.2 Assessment and evaluation
- 2.3 Formative and summative assessments
- 2.4 Assessment / Evaluation Models
- 2.5 The Context, Input, Process and Product [CIPP] model
- 2.6 Perspectives on quality education
- 2.7 Emergent Issues in enhancing the teaching and learning of science subjects in schools
- 2.8 Examinations and students' academic achievements
- 2.9 Attitude and students' academic achievements
- 2.10 Subjects' Schemes completion and students' academic achievements
- 2.11 School attendance, punctuality and students' academic achievements
- 2.12 Uniform assessment procedures and academic standards in schools
- 2.13 Scoring criteria and uniform scoring criteria in the school system
- 2.14 Promotion policies in the school system and academic standards
- 2.15 Standardized process of constructing examination items
- 2.16 Concept of standardized achievement test and teacher made test
- 2.17 Validity and reliability issues in assessment instruments
- 2.18 The predictive validity of mock examinations
- 2.19 Examination administration and supervision as indices of quality in the educational system
- 2.20 Global trends in unified examinations programmes
- 2.21 Summary of the literature review and gaps in knowledge

2.1 Concept of Unified Examinations

Robert and Grunlund (2000) define unified examinations as examinations that are designed to determine the degree of knowledge and proficiency exhibited by an individual in a specific area or set of areas with specific directions for administering and scoring. Lippincott and Wilkins (2006) also describe unified examination as a measure that is administered and scored by uniform objective procedure and for which norms have been established (prescribed routine to assure that the process is consistent) so the scores of anyone completing the test can be compared to the norms. Such testing procedure produces a statistical profile used as a measurement to evaluate student's learning in comparison with a standard norm.

Unified examination has also been defined by Moronkola (2003) as the process of finding out how much of objectives in cognitive, affective and psychomotor domains a learner has learned in specific learning tasks commensurate with the level of study he subjected himself. La – Celle (2000) opines that unified examinations offer diagnostics tests for students since these tests help pinpoint students' strengths and weaknesses and also provide a benchmark with their peers. It makes it possible to make an objective determination of knowledge status since in order to respond to the test items, it is necessary to know specific materials. Afuwape and Olatoye (2003) opine that a good unified examination should emphasise only those concepts that were emphasised in the classrooms, the examinations should cover materials on which students expect to be tested and require students to do more than recall factual information.

Tambo (2010) defines unified examinations as one form of assessment that consists of a set of questions that are administered during a fixed period of time under reasonably comparable conditions for all learners. The researcher further asserts that assessment consist of all the

procedures and strategies that are used to obtain information about students' learning. In the same vein, Okpa, Bessong, Onete, Etim and Achigbe (2010) view examination as an indispensable tool for evaluating or auditing the education sector which serves as a tool for providing accountability of educational programmes that is important for publicly recognised standards. While Bello, Kolajo and Uduh (2010) believe that unified examination is the process of finding out how much of the objectives of specific learning tasks a learner has learnt, which could be a spoken or written test of knowledge which are used to monitor the performances of the educational system and as an accountability measure of schools. They further assert that unified examinations are also used to measure and judge the standard of education in any country.

Asuru (2010) defines unified examination as the assessment of the examinee's behaviour or performance when confronted with series of questions, problems, tasks or situations in order to ascertain the amount of knowledge, skills, attitudes or behaviour that he has acquired, the extent to which he is able to utilize them or their quality and effectiveness. In addition to this, Wasanga and Ramani (2010) conceive unified examinations as assessment tools used in auditing the success of an education system in realization of the goals of education. They opine that examinations are used to measure the level of the candidates' achievement and to certify the candidates' level of education, do training and for employment purposes. At policy level, examination results are used to make decisions that have far reaching implications on the lives of learners.

Adikwu (2008) is also of the opinion that unified examinations are standardized tests that all students answer the same questions under uniform conditions and time limits and that there is a uniform or standard reference group to which a student's performance can be compared. In the researcher's view, unified examinations are designed to obtain and interpret scores in some

objective form which can be used to evaluate individual testee's performance based on acceptable standards.

Kwasi (2009) sees unified examinations as a system that can be used for accountability purposes and for improving the quality of education especially if the examination replicates what is taught in the classrooms. Owolabi (2004) also acknowledges that unified examinations are required for selection, placement, guidance, scholarship, feedback, funding, benchmarking, diagnostic and prognostic issues. The researcher reiterated the fact that examination results are used also for promotion, progress report, quality control, accountability and certification purposes. Development in each of these areas according to the researcher, depend on the quality of assessment on which it is based.

Robert and Grunlund (2000) views unified examinations as a particular type of assessment that typically consists of a set of questions administered during a fixed period of time under reasonably comparable conditions for all the students. Gardner (2006) however argues that unified examinations create a strong reason for learning among students which creates passive rather than active learning strategies. Aggarwal (2008) affirms that unified examinations are those examinations that systematically test the knowledge, skills, special or general capacity of the student that is usually carried out under the authority of some public body. In the researcher view, unified examinations intend to perform the following functions: To evaluate the achievement of the students; to help in diagnosis; to help in prognoses; to act as motivators; to measure the efficiency of the teacher; to measure the efficiency of the school; to raise the standards of education; to measure fitness of students for promotion and admission to higher courses; to help in selection by competition; to help in guidance; and to acquaint the parents with the progress of their wards as well as to measure some personality traits.

2.2 Assessment and evaluation

Secolsky and Denison (2011) define assessment as the systematic collection, analysis and interpretation of information related to a particular outcome. Assessment, they opine is used to evaluate educational progression and to guide us in the decision making routine. While evaluation in their opinion, occurs at one moment in time and involves both quantitative and qualitative analysis of information to determine the strengths and weaknesses of given programmes or teaching methods which results in the analysis of the worth, effectiveness and values of the process. This they opine helps to determine the match between intended outcomes and actual outcomes. They further assert that there is a great amount of qualitative and quantitative complexity with assessment which aids our professional judgement.

Emaikwu (2008) defines assessment as one of the instruments for evaluation and accreditation in schools that is used for determining difficulties and level of mastery of examinees. The researcher notes that assessments are structured exercises or questions which require the respondents to display a pre-determined behavioural trait. It is an instrument used to elicit a type of behaviour or competency one is interested in finding out about. According to Anderson (2006), assessment and evaluation are used to determine individuals or groups performances by measuring their skill levels on variables of interest as well as to facilitate a programme's development, implementation and improvement by examining its processes and/ or outcomes.

Wilson (2010) sees assessment as the gathering, analysis and interpretation of evidence which describes institutional, departmental and divisional or agency effectiveness which are used to improve the effectiveness of programmes. While he conceptualizes evaluation as involving methods and analysis that answer questions to inform programme improvement. This he believes leads to

judgement based on factual information gathered during an investigation. In the same vein, Huitt (2007) describes assessment as the collection of data to describe or better understand an issue and evaluation as the comparison of data to a standard for the purpose of judging the worth or quality of a project or programme. Similarly, Tambo (2010) believes assessment consist of all the procedures and strategies that are used to obtain information about students' learning or object which results in a value judgement on what is being assessed. The researcher is of the view that assessment helps to develop effective policies and procedures that contribute to strategic planning which demonstrate to external constituencies the commitment to continually change to meet various student developmental needs and learning styles. While evaluation according to the researcher, appraises the strengths and weaknesses of programmes, policies, personnel, product and organizations to improve their effectiveness.

Adebule (2005) however sees assessment as a less involving term than evaluation. The researcher point out that assessment is the process investigating the status of an individual or group with reference to an expected outcome. Assessment as pointed out by the researcher, can be used to obtain information for decision making about students, curricula, programmes and educational policies. This is why Adedokun (2012) defined assessment as the systematic collection of data to monitor the success of a programme or course in achieving intended learning outcomes for students, programmes or organisations. While the researcher conceives evaluation as the judgement by the instructor or educational researcher about whether the instruction or programme has met its intended learning outcomes. Ali (1989) however conceives assessment as the process of measuring behaviour and using the results of this measurement to take certain decisions and evaluation as the quantitative judgement which results from assessment. It is a value judgement based on quantitative data obtained from testing and measurement.

Adeleke (2010) acknowledges that while assessment is the process by which information is obtained relative to some known objective or goal, evaluation is designed to provide information that will help us to make a judgement about the appropriateness, worthiness, goodness, validity, legality or otherwise of something for which a reliable measurement or assessment has been made. In the same vein, Alexander and Anthonio (2012) concede that assessment is the gathering of information concerning the functioning of students, staff and institution to bring about improvement. The information may or may not be in numerical form, but the basic motive for gathering it is to improve the functioning of the institution and its people. In the researcher's opinion, assessment can refer to two different activities: the mere gathering of information (measurement) and the use of the information for institutional and individual improvement (evaluation).

The researchers further conceive evaluation as having to do with motivation and rendering value judgements. They argue that assessment and evaluation are intricately linked and as such assessment policies and practices should always give full consideration to the evaluative uses to which any measurement will be put. Programme assessment therefore provides information for decision makers who have responsibility for existing or proposed educational programmes. In Hogan's (2007) opinion, organizations utilize programme assessment periodically to assess their processes, procedures and outcomes. It looks at what you set out to do, at what you have accomplished and how you accomplished it. Programme assessment also provides perspective, evidence and the types of information necessary for sound decision making. For instance, programme assessment may be used to help make decisions concerning whether to develop a programme (needs assessment), how best to develop a programme (formative assessment) and whether to modify or even continue an

existing programme (summative assessment). Further to this, the researcher believes gave the following outlines as additional benefits of conducting programme assessment:

1. Participants: In the long run, projects sustainability will depend on the degree to which participants benefit directly (short term and long term) from the experiences or services. The assessment will provide evidence of the way in which participants' learning is impacted.
2. Project improvement: Project strength and weaknesses can be identified through an evaluation; it can map out the relationship among project components i.e. how the various parts of a project work together. This information can be used to re-design the project and increase both efficiency and effectiveness.
3. Public relations: Data generated by an assessment can be used to promote the products and services of the project within and outside of the agency. Statements based on evaluation results will be viewed as more substantial and justifiable.
4. Funding: Assessment can provide evidence of project effectiveness; such evidence may be important when limited resources are being distributed internally. Assessment results are often helpful in determining if a project should be continued, scaled back, discontinued or enhanced.
5. Improved delivery: An assessment can help clarify the purposes of the programme, allowing decision makers to examine project components against well thought-out criteria.
6. Capacity building: As the programme is examined those involved will also develop insights into the workings of the organization. These insights can be used to inform a strategic examination of the programme by identifying priorities, overlap, gaps and examples.

7. Stock taking: Engaging in assessment provides opportunity to document where the project has been and where it is going and consider whether the programme is doing what its designers hoped it would do.

Ajibade (2014) defines assessment as a process of systematically gathering, analysing and interpreting evidence to determine how well students' learning matches expectations and views evaluation as the collation and analysis of data that will result in a value judgement. Anderson (2006) however argues that the primary difference between evaluation and assessment lies in the focus of the latter on examinations, the researcher believes that evaluation serves to facilitate a programme's development, implementation and improvement by examining its processes and or outcomes while assessment determines individual or group's performances by measuring their skill levels on a variable of interest.

Ball (2011) believes that the term 'programme assessment' came into wide use in the mid- sixties when efforts at systematically evaluating programmes multiplied. Singh (2010) defines assessment as the process of objectively understanding the state or condition of a thing through observation and measurement while evaluation in his view, is the process of observing and measuring a thing for the purpose of judging it and determining its value either by comparison to similar things or to a standard. In the same vein, Kolawole (2006) defines evaluation as the process of finding out whether or not a programme has succeeded or verdict of worth of any educational enterprise and assessment as the development and application of tests and other instruments and techniques systematically to appraise students', individuals or groups performances.

Boston (2002) agrees that evaluation has to do with ascribing judgement to the quality of educational venture or programme while assessment broadly include all activities that teachers and

students undertake to get information that can be used diagnostically to alter teaching and learning. Yoloye (2008) equally asserts that assessment is the evaluation of the performance of individuals in an educational system or the performance of the system itself with a view to understanding the circumstances that facilitate or hinder optimum performance and helping the individual or the system move towards a better level of performance while evaluation is the passing of judgement of value or worth of a given entity based on certain criteria. By this definition, educational assessment is meant to serve primarily a management function, however it could also serve the function of selection and certification according to the researcher. He further notes that educational assessment of the individual should have four characteristics of being systematic; cumulative; comprehensive and guidance oriented. Educational assessment must embrace context variable such as teachers, methods of instruction, instructional materials, time allocation, and curricula among others. The combinations of the assessment of the individual's performance and of context variables as noted by the researcher constitute an assessment of the performance of the system of education.

Emaikwu (2008) defines evaluation as the act of obtaining information either quantitatively or qualitatively for use in judging the worth of a programme, product, procedure, subjects or courses, curriculum objectives or the potential utility of alternative designs to attain specified objectives. Rossi, Lipey and Freeman (2004) see assessment as the systematic and meticulous application of scientific methods to assess the design, implementation, improvement or outcomes of a programme. In Anderson's (2006) view, assessment is the process of assessing the merit (does it work?) and its worth (do we need it?) of an educational endeavour. Secolsky and Denison (2011) define assessment as the systematic collection, analysis and interpretation of information related to a particular outcome.

2.3 Formative and summative assessments

Yoloye (2008) believes that there are different types of assessments depending on the object being assessed and the purpose of the assessment. The generic goals of most assessments as noted by the researcher are to provide useful feedback to a variety of audiences including sponsors, donors, clients groups, administrators, staff and other relevant constituencies. The researcher equally opines that the basic distinction between formative and summative assessment is that formative assessment strengthens or improve the object being assessed by examining the delivery of the programme or technology, the quality of its implementation and the assessment of the organizational context, personnel, procedures and inputs while summative assessments however examines the effects or outcomes of some objects by describing what happens subsequent to delivery of the programme or technology, assessing whether the object can be said to have caused the outcome, determining the overall impact of the causal factor beyond only the immediate target outcomes and estimating the relative costs associated with the object. As stated by the researcher, formative assessment includes several assessment types:

1. Needs assessment which determines who needs the programme, how great the need is and what might work to meet the need.
2. Evaluability assessment which determines whether an evaluation is feasible and how stakeholders can help shape its usefulness.
3. Structural conceptualization which helps stakeholders define the programme or technology, the target population and the possible outcomes.
4. Implementation assessment which is used to monitor the fidelity of the programme or technology delivery.

5. Process assessment which investigates the process of delivering the programme or technology including alternative procedures.

Yoloye, (2008) equally reiterated the fact that summative assessment includes several assessment types:

1. Outcomes assessment which investigates whether the programme or technology caused demonstrable effects on specifically defined target outcomes.
2. Impact assessment which is broader and assesses the overall or net effects of intended or unintended effects of the programme as a whole.
3. Cost – effectiveness and cost benefit analysis which addresses questions of efficiency by standardizing outcomes in terms of their cost and values.
4. Secondary analysis which re-examines existing data to address new questions or use methods not previously employed.
5. Meta-analysis integrates the outcome estimates from multiple studies to arrive at an overall or summary judgement on an assessment question.

Stufflebeam and Shinkfeild (2008) believe that the major difference between formative and summative assessment is that formative assessment helps determine what works best for a programme while summative assessment examines the overall quality and outcomes of a programme. Astin and Anthonio (2012) conceive formative assessment is the assessment for learning where emphasis is on monitoring students’ response to learning while summative assessment is the assessment of learning in which the focus is on determining what the student has learnt at the end of the unit of instruction or grade level. Ajibade (2014) describes formative assessment as those assessment that guide classroom practice, diagnoses gaps in students’ learning in order to facilitate better teaching and learning or remedial action. On the other hand, summative

evaluation provides information about the knowledge, skills, values and attitude that the learner has acquired at the end of a course of instruction. Agwu (2001) sees formative assessment as assessment that contributes to the improvement of educational programme through the provision of periodic feedback during the planning process and summative assessment as being primarily concerned with determining the usefulness of the plan.

Anderson (2006) describes formative assessment as assessment that informs programme managers about ways to improve programme quality or the delivery of programme services. It asks how well the programme meets the needs of its intended recipients or how the initial outcomes met the desires of the recipients compared with outcomes achieved by others in similar programmes elsewhere. The researcher listed implementation assessment, process and evaluability studies as the designs for conducting formative assessment. Summative assessment on the other hand, has as its purpose the measuring of programme performance in terms of outcomes and impact during on - going operation or after programme completion. Summative assessment as noted by the researcher, determines the overall quality or value of a programme. It asks whether the programme was worth what it cost in terms of time, money and other resources or it asks, compared to other similar programmes, and was the programme the most cost effective. The researcher opine that the main reason for conducting a summative evaluation is to inform decision makers (administrators and funders) about whether the programme was successful, which may lead to decisions about continuing or discontinuing the programme or implementing the programme more widely. Anderson (2006) summarized the two types of assessment as follows:

Formative assessment

- a. Any combination of measurement obtained and judgements made before or during the implementation of materials, methods, activities or programmes.

- b. Formative assessments are used to control, assure or improve a programme.
- c. It includes but is not limited to needs assessment or pilot testing a programme.

Summative assessment

- a. Provides overall effects and programme accountability.
- b. Allows conclusions to be drawn about impact, outcomes or benefits of a programme or methods.
- c. A good summative evaluation should report why the programme was effective or ineffective.

Ball (2011) assert that formative assessment provide information to decision makers who have responsibility for existing or proposed educational programmes on how best to develop such programmes and summative assessment as being used to provide information as to whether to modify or even continue an existing programme. Igwe (2008) defines formative assessment as measurement for the purpose of improving a programme and summative assessment as the process of observing and measuring a thing for the purpose of judging it and of determining its value either by comparison to similar things or to a standard.

Yoloye (2008) describes formative assessment as assessment whose basic philosophy is one of mastery, whereby testing becomes an integral part of instructional process and the results of assessment are consistently fed back into the system so as to modify educational transactions and sometimes educational objectives. Formative assessment aids and guides development and implementation of a programme. Thus it is the type of assessment that is most appropriate during the planning and implementation stages of a programme and should be built into a programme from the planning stage. Summative assessment on the other hand as noted by the researcher, gives judgement as to the value or worth of the outcomes of a programme. It corresponds largely to the

traditional model of assessment. He believes that proper summative assessment should concern itself with both planned and unplanned outcomes and therefore the standards for assessment are limited to those set in the original objectives. Aduloju (2008) equally views formative assessment as assessment that takes place at the implementation stage with the sole purpose of detecting and correcting any defects. While summative assessment in the researcher's view takes place at some logical or terminal points with purpose of providing judgement as to the value or worth of the programme. It is designed to determine the extent to which the instructional objectives have been achieved and used for assigning course grades or for certifying pupils mastery of intended learning outcomes.

2.4 Assessment and Evaluation Models

Stufflebeam and Shinkfield (2008) define evaluation as the systematic acquisition and assessment of information to provide useful feedback about some object. This definition according to them, implies that all evaluation or assessment work involves collecting and sitting through data, making judgement about the validity of the information and inferences we derive from it, whether or not assessment of worth or merit results. There are several models of evaluation or assessment which have been designed by specialist in the field of evaluation. Junaid (2010) believes that the reason for the different evaluation/assessment models is because the models evolved from varied programme settings, within formal education or within out of school and non-formal settings, within mental health settings or within family life education settings, amongst others.

In the researcher's view, an examination of different evaluation models indicates that the various definitions by the different researchers cluster around three major definitions:

1. Evaluation as an assessment of discrepancy between objectives and performances.
2. Evaluation as an assessment of outcomes intended or otherwise.

3. Evaluation as the process of obtaining and providing information for decision makers.

Ilogu (2005) asserts that a model provides a conceptual framework for designing evaluation or assessment studies. Models he believes gives direction to an evaluation or assessment design because it consist of a set of steps which when followed and implemented will give rise to some information which can be used by decision makers to improve educational systems or any relevant programme. In the researcher's opinion, when selecting an evaluation or assessment model the following should be considered:

1. The appropriateness of the model (is itadequate in providing the necessary information?).
2. The complex nature of the model (is the model useable, simple, cost effective and easyto implement).
3. The validity and reliability of the model.

As noted by him, models are so vast that a classification is necessary in order to discuss them systematically:

1. The Mainstream and Alternate Models- where the evaluator and participants play active roles; in mainstreams, tasks are evaluator – oriented while in the alternative models both the evaluator and participants play active roles.
2. The Conventional and Naturalistic Models – the Conventional model derives from logical positivist epistemology while the Naturalistic derives from phenomenological epistemology. Conventional models include Systems models, Stufflebeam and Guba's (1970) CIPP Model and all other objective driven Models e.g. Cost-Benefit Analysis model. Naturalistic Models are represented by descriptive and ethnographic evaluations;
3. The Goal attainment model, Judgemental Model (intrinsic and extrinsic judgements), and Decision Facilitation models. Goal-attainment Models include Objective driven Models

exemplified by the works of Tyler (1950). Decision-facilitation Model consists of the Models of Stufflebeam and Guba (1970), Provus (1971) and Alkin (1969);

4. The Stufflebeam and Webster (1980) categories comprising: Politically-Oriented studies (Pseudo-evaluation), Question- Oriented studies (Quasi-evaluation) and Value- Oriented studies (True-evaluation). The first is politically controlled and inspired by public relations; the second ask questions and applies suitable methodologies while the third permits judgements.

Huit (2007) gave eight categories of Models: systems Model; behavioural Model; decision making Model; goal-free Model; criticism Model; accreditation Model; adversary Model and transaction Model. These classifications attempts are to distinguish among the Models as regards:

- a. Research methodology for establishing truth or confirmatory statements.
- b. Values from which criteria are derived for assessing worth.
- c. The role of the evaluator in relation to the clients and the system in the evaluation process.

Eya (2001) asserts that an assessment model is a representation of reality or something you focus at for the actual making of a thing.

2.5 The Context, Input, Process and Product (CIPP) Model

Programme assessment or evaluation deals with collecting and documenting information about a particular programme to enable valid decision making pertaining to particular aspects of the programme. This is so as to arrive at a particular definitive, intelligent, objective and valid conclusion regarding the specified objectives and questions related to a programme's overall effectiveness. Guber and Stufflebeam (1970)opine that the context, input, process and product (CIPP) assessment model involves the systematic investigation of the value of a programme or

other evaluand. They further assert that it involves delineating, obtaining, reporting and applying descriptive and judgemental information about some object's merit, worth, probity and significance requiring identifying and continually guiding a decision, providing accountability information and advocating effective programme methodologies.

According to these researchers, the CIPP model is designed to address four different classes of decision making: planning(selecting objectives), structuring (designing a project around specified objectives), implementing (operating and executing a project) and recycling (judgement and reaction) which all directly correlate with the assessment methods of the theory.

Context assessment: This is to stipulate and validate the goals and objectives taking into account the existing conditions or environment, needs, problems and conditions in the environment.

Input assessment: Stipulates the information on the resources available and how they could be used for achieving the goals such as assessment of staff, students, physical facilities and equipment. It is also used to assess alternative procedures for attaining desired goals.

Process assessment: The main purpose of this is to determine if there is a problem during implementation. It is concerned with course offering, teaching methods and other relevant processes including the efficiency in the utilization of the input variables.

Product assessment: It is used to determine the effectiveness of the programme to realise the goals and objectives set. It is embarked upon when the course offering have been completed and the candidates have graduated from the programme. It compares programme outcome to programme goals and the processes used to achieve the goals and objectives.

Ilogu (2005) believes that the context, input, process and product assessment model by Guba and Stufflebeam (1970) consist of evaluation or assessment as a continuing process which requires a systematic programme of implementation between the evaluator and the decision maker. This

model as noted by the researcher involves four important phases: planning, structuring, implementation and recycling:

Planning: goals and objectives are determined.

Structuring: means and procedure to be adopted.

Implementing: utilization and implementation of procedure.

Recycling: considers achievements and make decisions on modifying; terminating or continuing with the programme.

2.6 Perspective on Quality Education

Quality in education according to Adebule (2005) deals with issues of relevance, validity functionalism, excellence and efficiency in the achievement of educational goals and priorities. Junaid (2010) asserts that the quality of the knowledge of the society depends on the quality of education. Amaele (2010) describes quality as essential characteristic of a thing which distinguishes it from other things. It refers to the fitness and efficacy of that thing in performing the functions that are associated with it. Quality education he opines is a product of a number of factors such as: well-articulated policies on education, comprehensive, adaptive and realisable curricula, adequate funding, teaching and learning facilities or equipment and above all quality teachers. In his view, quality education also relates to purpose, potentiality, productivity, standard and defined goals which also entails a system of academic and professional excellence and effectiveness. According to Afemikhe (2003) quality is a degree or level of excellence, degree of conformity to standard and interest or enduring good trait or characteristic that makes a person or thing somewhat special. According to him, quality assurance as a process involves ensuring that all intermediate products in production conform as much as possible to specifications. In the researcher's view, in education it is designed to ensure that products and services are of appropriate quality. Quality control in

education is a means by which an educational system ensures that the education it delivers will serve the purpose for which it is intended.

This is why Onwuakpa (2003) opine that not only should the assessment of quality of education be carried out using the academic achievement of students in public examinations, but that measures should be developed to look at other valued aspects of the education such as processes and inputs. According to him such measures like information about school enrolment, finance, facilities, class size, teacher qualification and salary levels of teachers should be developed in Nigeria. The researcher further emphasized that quality in education has been viewed from the perspective of fitness for purpose, perfection and conformance to standards, value for money, consistency and relevance. In a nutshell, the quality of a programme can be seen from the perspectives of inputs, processes and outputs of a programme. In Owodunni's (2010) view quality education should go beyond merely schooling the students to really educating them, which will make students to possess a well-adjusted self – reliant productive social personality in addition to evidence of intellectualism after schooling. In addition to this, the researcher asserted that such a qualitative person is mentally alert, physically and vocationally skilled, attitudinally balanced, morally sound and spiritually committed to the services of God and mankind.

Alade (2002) believes that quality education involves having the essential knowledge, positive values and skills that will make life meaningful to an individual and his society. Tambo (2010) argues that since all stake holders in the education industry do not often share the same concept of the quality of school programmes, learning achievements and activities, every stakeholder should therefore formulate as clearly as possible their requirements for quality education. According to the researcher, education systems should design and implement assessment systems that not only protect and enhance the quality of education but are inclusive of all learners irrespective of the

differences in their ethnic, religious, linguistic, gender, economic, location as well as physical ability. Elobuiké (2010) notes that an educational level is functional or qualitative if at the end its goals are largely achieved. Other quality indicators in his view are adequacy and relevance of the curriculum, provision of textbooks, equipment, teachers, infrastructure and physical environment.

Rwanamiza (2010) opine that majority of teachers, parents and learners perceive quality education in terms of learner achievement as reflected in the national examination results. Wasanga and Ramani (2010) assert that examinations when used properly can help improve the quality of teaching and learning. Odada (2007) acknowledges that quality education is all encompassing, touching on many things like curriculum, students, teachers, teaching methods, environments, parents, community and outcomes. While De Grauwe and Naidoo (2004) stress that quality in education may be viewed as a multidimensional concept composed of three interrelated dimensions; the quality of the human and material resources available (inputs), the quality of the management and teaching and learning processes taking place (processes) and the quality of the results (outputs). These researchers further noted that, deterioration of the quality of schools precisely relates to the weakening of the assessment mechanisms in most schools and that academic standards and quality can be improved upon through the use of examinations and tests.

The researchers further assert that examinations can be very useful information, giving the teachers useful insights into the weaknesses and strengths of their students and therefore their teaching. Aminigo (2011) is of the opinion that the essence of education is to develop the child and make him fit to inhabit and transform his world in future, it is meant to provide all round development, moral, intellectual, physical and spiritual. Education in his view is meant to develop the intellect, enhance the acquisition of skills that enable the recipient child to become fulfilled intellectually and acquire practical skills and abilities that would enhance his wellbeing and

employment. The researcher argues that if due to inadequate funding, crises of quality, impoverishment of the teaching executives and blatant failure to ensure the child's education is right, we can declare that as adults we have failed in our collective duty to provide quality secondary education for our children.

Kandewaal (2002) is of the view that quality in education has to do with what students learn in the school that is, acquiring usable knowledge and skills. The researcher sees quality education more as a process than product, more of an orientation than an objective, that which is recognized rather than finitely defined and more about outputs than input. Quality education in his opinion is related to equity, efficiency and effectiveness. Tsogdov (2012) on the other hand, views quality in education as a complex construct that bears multiple attributes associated with delivery of services by the education systems. According to the researcher, quality in education is synonymous with meeting professional standards through a system of supervision, inspection and control.

Andala, Digolo and Kamande (2014) further affirm that quality in the educational system is a very crucial determinant of the economic development and social stability of any nation. They opine that quality of education is not complete if the quality of assessment is not factored into the education system. Furthermore, they identified the main criteria of quality and acceptable assessment to include the use of a published criteria, regulation and procedures that are acceptable and consistently applied. Omolewa and Sarumi (2002) assert that the quality of teachers has a positive impact on the quality of instructional delivery and as such the government should provide regular training opportunities for teachers to update their knowledge.

Abiogu (2010) equally sees the teacher as the key in the entire education process as no adequate training can take place without competent teachers to handle the training programme. Thus the

teacher more than any professional group influences the lives of the nation's youth and the future. Therefore if the child is the centre of the educational system, the teacher is the pivot of the educational process. According to the researcher, it is the qualitative teacher who in the final analysis translates the national policies into practices and national programmes into actions, such tasks is accomplished in the classroom. In the same vein, Aduloju (2008) asserts that there is a direct relationship between the quality of teaching and the quality of students' learning, therefore good teaching implies good learning.

2.7 Emergent Issues in enhancing the teaching and learning of science subjects in schools

According to Jiboyewa (2003) achievement in the school organization is generally rooted in the ways individuals and groups perceive themselves and their environment. He postulates nine factors as critical to effective behavioural and cognitive learning; ability, development, motivation, learning time, instructional quality, the home, peer influence and leisure. According to him these factors must be optimized in order to improve learning. In the same vein, Ojogbani and Akuto (2008) enumerated three ways by which teachers can encourage students to achieve flow in their learning experiences:

1. Competence and motivation: The teacher should be competent and motivated and should show knowledge of the subject matter and enthusiasm in teaching. The teacher should present himself as a model that is intricately motivated.
2. Optional match: the teacher should develop an optional match between what he challenges students to do and what their skills are. The challenges should match their abilities.
3. Confidence: the teacher should raise confidence in students by providing them with both instructional and emotional support that is, the teacher should give clear instructions and

should always express belief in students' ability to cope with the task as this encourages them to handle learning with confidence and minimal anxiety.

Obe (1996) asserts that schools have to eliminate failures by increasing involvement, relevance and thinking processes for the child, by this way the child is kept away from activities that lead to misbehaviour. Yoloye (2008) equally affirms that the purpose of teaching and learning is to bring about some deliberate changes in the pupil which can cover changes in cognitive knowledge, creative ability, and behavioural norm among others. In his view, both the teacher and pupils are elements of the teaching and learning process which cannot operate if either of the two elements is missing. He further argues however that at the same time, the teacher and pupils are systems in themselves in the sense that they have their own goals and use various inputs to attain them; one of the teacher's goals is to teach (transform) the pupils and one of the learner's goal is to learn (be transformed).

Onoshakpokaiye (2011) conceptualizes learning as the acquiring of a repertoire of cognitive and metacognitive structures. It is also linking new information to prior knowledge which is goal oriented. Learning he noted, involves acquisition of new knowledge which brings about transformation. Learning is said to have occurred if the mental processes by which one represents reality and internal understanding have been changed in ways that are adaptive or advantageous to the individual. Similarly Aduloju (2008) describes teaching as an action of the teacher that helps pupils to acquire and retain knowledge, attitude and skills while learning is associated with behavioural changes in cognitive (mental process), affective (attitude and feelings) and psychomotor (brain and muscle co-ordination) domains. The researcher believes that teachers as part of the dynamic profession must keep abreast of improvement in teaching and evaluation methods at the classroom level.

Konstanpoulos (2006) opine that the ease with which we understand instructions and procedures are likely to be influenced by two general factors; the intrinsic complexity of the information and the manner in which the information is presented. These two factors interact both with each other and with relevant characteristics of the human cognitive system. If students are required to follow instructions or engage in procedures that exceed working- memory capacity then understanding, learning and problem solving may be hampered. According to Lombardi and Oblinger (2008), students engage with subject matter based on their expectations about how their achievement will be evaluated. Assessment in the researcher's opinion defines what students regard as important, how they spend their time and how they come to see themselves as students. Kaplan and Saccuzzo (2005) concede that reward can significantly affect test scores as most students will work hard to obtain the praise "you are doing well". They believe that reinforcement and feedback guide the examinee towards a preferred response.

Ekpo (2005) notes that an effective management of learning situations calls for a good knowledge of the learner, the content of what is to be learnt, the materials suitable for imparting the content, the activities to be involved and the intention to be achieved. It is important for teachers to always bear in mind that there is a relationship between pupil and the teacher, the pupil and the learning materials, the teacher and the learning materials. The ways according to the researcher, these bonds of relationship are manipulated and strengthened for the achievement of desired aims, goals and objectives are good indices of articulation of curriculum components.

Adeogun and Oshifila (2008) found out that teachers who regularly monitor and supervise their students' learning by checking students' work and giving them feedback are likely to have students who exhibit higher level of achievement. In Gadner's (2006) opinion, marking and giving feedback to students plays a key role in determining their feeling of being capable of learning, of tackling

their classroom activities and assessment tasks successfully. It encourages their interest in performance and also adds to the general impression that students have of their teachers' helpfulness and interest in them as learners. However, Adewale and Amao (2003) argue that individual students process information and approach problem solving in different ways and this certainly affect their achievements in schools. They also opine that poverty and unemployment may put some certain category of students under stress thus hampering their achievements in school.

Aggarwal (2008) defines teaching as an essential part of education with a special function to impart knowledge, develop understanding and skills. Learning as noted by the researcher is a progressive change in behaviour, which involves new ways of doing things and operates in an individual's attempt to overcome some barriers or to adjust themselves to new situations. This results in the acquisition of knowledge, attitudes, habits and skills. Further to this, the researcher accede to the fact that the more a teacher is aware of the past experiences of the students, of their hopes, desires and interests the better he will be able to understand the forces at work that need to be directed and utilized for the formation of reflective habits. Furthermore, the teacher is a guide and director, he steers the boat but the energy that propels it must come from those who are learning.

Teaching and learning process therefore is a means through which the teacher, learner, curriculum and other variables are organized in a systematic manner to attain pre-determined goals and objectives. According to the researcher, for teaching to be meaningful, the teaching and learning activities which are varied and complex have to be harmonized and this include harmonizing the learners and their individual differences; methods of teaching; materials to be taught; teaching devices and aids; questioning and answering; assignments; thinking, enjoying and creating; practical skills and discussion. Teaching and learning process is influenced by the totality of the situation. It is fruitful and permanent if the total situation is related to the life situations. The teacher

creates the learning situation for the students. The process is the interaction between the students and the teacher (Aggarwal, 2008)

Adamu (1992) observed that the insufficiency of materials and equipment necessitates some regulations in the frequency of science practicals and students' participation in them. According to him, the adopted style of teaching in the schools is always rationalized by the teachers by reference to the inadequacy of laboratory materials and equipment. Owodunni (2010) asserts that teachers interpret the educational policies and apply principles and theories in real life practices. The teacher in his view holds the trust for the implemented curriculum and as such, if the teacher is not of good quality, nothing of durable worth can be achieved. Teachers need specific training in subject content and its methodology to guarantee their effectiveness.

Similarly Kolawole (2006) acknowledge that a number of factors affect students' achievement among which are whether: classroom instruction is examination driven; classroom environment is not conducive for learning due to a number of factors; quality and quantity of teachers pose a problem; instructional materials are not available to engender pupils' participation; the mad rush to finish the syllabus also poses a great deal of problem to teachers, students and the curriculum (it does not give room for thoroughness); teachers and schools are no more adequately supervised to make sure that instructional facilities are available to ensure that teachers are doing what they are expected to do; the socio-economic problem of the society has found its way into the school system and as such many teachers are now merchants instead of facilitators of learning; class sizes are too large making effective teaching impossible and students do not have required materials to work with when teachers are available to work.

In the same vein, Omolewa and Sarumi (2002) acknowledge that lack of adequate facilities, finance and political will have grossly hampered the way curriculum is being implemented and consequently the achievement of students in the various science subjects. Adesoji (2002) also identified inadequate instructional materials, expensive text books, inadequate practical exercises, students' inability to comprehend the language of science, stereotyped teaching methods, inadequate number of qualified science teachers, and population explosion in the science classes and overloaded syllabi as the bane of science education in Nigeria. Similarly Aroyoku (2011) found teacher's methods, lack of infrastructure, lack of instructional materials based on poor funding, lack of initiative, creativity among others as factors militating against proper teaching of science subjects.

Fasasi (2010) notes that there has been a public outcry on the perceived continual decline in the standard of education offered and received in the country. This is because according to him, the educational system is plagued by a number of issues and challenges: quality and quantity of teachers, lack of equity, access, attrition, inadequate and decaying infrastructural facilities and poor performances of students in internal and external examinations, especially at the secondary school level. Owodunni (2010) argues that in the teaching and learning situation, the teacher, subject matter and students play a key role. Therefore the teacher should possess a solid knowledge of the specific subject matter as well as its related fields. In his view, the teacher must also have a good knowledge of and understanding of the learner in its complete entity as well as his needs and interest as this will aid the teacher in the selection of the methodology and teaching techniques that are appropriate for presenting the desired knowledge. Akani (2001) listed the following as the modern methods of teaching a science subject:

1. Identify the problem.

2. Formulation of testable hypothesis.
3. Testing of hypothesis.
4. Collection of data from the experiment.
5. Analysis of data so collected.
6. Inferences and conclusion.

Aroyoku and Aderonmu (2014) are of the view that the knowledge of science is obtained through careful observation, experimentation and subsequent analysis of natural occurrences. The study of science in these researchers view aids students in the acquisition of high cognitive, affective and psychomotor dispositions which are relevant to the immense contribution and proffering of solutions to natural challenges in practical terms. This is why Avwiri (2011) asserts that in the teaching of chemistry, teachers are expected to have a good level of competency and mastery of the subject matter before introducing it to the students. In her view, teachers need to develop the interest and attitude of the students with regard to the subject matter through his or her method of teaching. They are expected as experts with good exposures and experiences to foster the adjustment of students, matching curricular offerings to levels of mental development, understanding students' basic cognitive and social problems, making curricular specifications relevant and motivate the students to learn the subject. Obomanu and Adaramola (2011) identified poor knowledge of mathematics as one of the major problems militating against students' progress in chemistry.

2.8 Examinations and Students' Academic Achievements

Kaplan and Saccuzzo (2005) define examination as a measurement device or technique used to quantify behaviour or aid in the understanding and prediction of behaviour. According to Bello,

Kolajoand Uduh (2010) educational systems often use examination results for accountability purposes and in particular for evaluating the effectiveness of instruction, for motivating students and teachers to perform well and for reviewing the effectiveness of schools. In their view, the overall goal of any assessment is to improve students' learning. Examination provides students, parents, guardians and teachers with valid information concerning students' progress and their attainment of the expected curriculum. It should also be viewed as information to improve students' achievement. Odada (2007) asserts that schools, teachers, inspectors and managers use examination results as one source of pupils and teachers' analysis and as such examinations offer a feedback on how well teaching and learning was done.

Kandelwal (2002) believes that examinations are very effective in assessing the scholastic achievement of students and that examination results are taken as future predictors of students' success or otherwise. According to Worthen and Borg (1993) Education Districts and individual schools depend on tests and examinations to guide instructional management decisions. They assert that a well-organized and carefully developed curriculum embedded and standardized test can serve the instructional purposes of diagnosing individual student's performance and attitude, evaluating and grading of individual student's performance determine achievement gains of groups of students within classroom groupings of students for instructional identification of under or over achievement and determine mastery of specific content or learning objective.

Braun, Kanjee, Bettinger and Kremer (2006) concede that examinations allow individuals, communities and countries to track the quality of schools and educational systems. Omirin and Ale (2008) also agree that examination results can be used to identify differences in performance between boys and girls, between Education Districts and locations (urban and rural), between schools or Education Districts in addition to the provision of information about performances,

underperforming schools may be identified, the reason for poor performances investigated and assistance provided. Diethel, Hermon and Knuth (1991) however argue that narrowly focused tests and examinations that emphasise recall have led to a similar narrowing of the curriculum and emphasis on rote memorization of facts with little opportunity to practice higher order thinking skills. According to them, good assessment information provides accurate estimates of students' performances and enables teachers or other decision makers to make appropriate decisions. The researchers listed the following as the characteristics of good assessment:

1. The content of the test [knowledge & skills assessed] should match the teachers educational objectives instructional emphasis
2. The test items should represent the full range of knowledge and skills that are the primary targets of instruction.
3. Expectation for students performance should be clear
4. The assessment should be free of extraneous factors which unnecessarily confuse or in advertently affect students' responses.

Kellaghan and Greaney (2003) also opine that examination results can provide insights into the achievement of students in the education system as well as identify schools in which students' performances are weak and so may require additional attention. In addition to this, Ajibade (2014) posits that examinations play the role of systematically gathering, analysing and interpreting evidence to determine how well students' learning matches expectations. The researcher further argues that examinations guide classroom practice; diagnose gaps in students' learning in order to facilitate better teaching and learning or remedial actions. However Mathew (1985) believes that one of the principles of unified examination is the principle of competition and advancement by merit. According to him, a unified examination has three major uses: to improve academic

standards; to bring forward able boys and girls from a lower social level and; to provide an objective system of selection. This is why Ikponwosa (2002) asserts that we can adversely affect the future of our students and indeed their mental health through episodic, hastily prepared examinations and grading procedures.

Following the World Bank (1988) policy paper “Education in Sub – Saharan Africa” which recommended a renewed commitment to academic standards, principally through strengthening examination systems, the Association for Education Development in Africa (ADEA) addressed the need to improve education quality. Among the reforms recommended are; broadening the scope of examinations to reflect the curriculum of schools, using diverse mode of assessment (written, practical, oral among others); redesigning examinations to include items which test higher order thinking skills and ensuring examinations differentiate between students on the basis of characteristics relevant to the opportunities been offered (Kellaghan and Greaney, 1992).

Kellaghan and Greaney (2003) equally identified many uses of examinations to include; appraisal of the academic achievement of individual students and assessment of the educational progress of large population so as to help understand their educational problems and develop sound public policies in education. In Deming’s (1992) assertion, it is significant to conduct quality examinations because testing drives instruction to a large extent. While Aminigo (2011) asserts that checking what students have learnt in schools through unified examinations is an effective way to grade how well they have learned from their classes. Popham (2010) is of the view that unified examinations indicate how well an examinee has acquired knowledge and mastered certain skills. Rudner and Schaffer (2002) further opine that unified examinations have the advantages of:

1. Comparability of individual, school and District performances.

2. The importance of specifying content and performance targets to encourage high aspirations and achievements
3. The potential motivating effects of tests if results are linked to hiring and school admission decisions.

The disadvantages of unified examinations according to Rudner and Schaffer (2002) are:

1. The fallacy that examinations alone lead to positive changes in education.
2. Lack of consensus about desired educational outcomes in various subject areas and the pitfalls of attempting to establish a national curriculum.
3. Limitations and biases inherent in testing, particularly multiple choice tests.
4. Short sightedness in not attempting to address the real equity issues related to education minority and low income students.

2.9 Attitude and Students' Academic Achievements

Ezenwa (1996) asserts that performance which is how well an individual is able to demonstrate desired abilities is a cardinal concept in education, the centrality of this concept is derived from the goals of instruction which is to bring about desired changes in knowledge, skills and attitudes of students. Ojeride and Kolo (2010) define attitude as a favourable or unfavourable reaction towards some experiences, situations or activities as a result of the way such an individual perceives and conceptualizes such experiences. While Pickens (2005) views attitude as a mental or neutral state of readiness organized through experiences, exerting a directive or dynamic influence on the individual's response to all objectives and situations to which it is related. Therefore when we refer to an individual's attitude, we are trying to explain his or her behaviour. The researcher further asserts that attitude are complex combinations of things we tend to call personality, beliefs, values,

behaviours and motivations. Attitude helps us define how we behave towards a situation or object. It includes feelings, thoughts and actions. Attitude also provides us with internal cognitions or beliefs and thoughts about people and objects which cause us to behave in a particular way towards an object or person. Students according to the researcher fail as a result of their poor attitude to school and academic work. Attitude to work in Ajuonuma's (2007) view is acquired as a result of the experiences one has been exposed to throughout one's developmental period and the way these experiences are perceived and conceptualized by the individual.

According to Ogunleye (1999) students develop negative perception and attitude to science learning due to the fact that the teachers are unable to satisfy their aspirations or goals due to the fact that some of the things taught in science classes have no bearing on their practical life or their own goals. In the researcher's view, instructional time and quality appear particularly direct and instrumental in science learning, not only did they have hypothesized and significant influences on achievement, but they also appeared to mediate the effects of other productivity factors on achievement. Asikhia (2010) identified negative attitude of some teachers to their jobs as is reflected in their poor attendance to lessons, lateness to school and poor method of teaching among others as being responsible for students' poor academic achievement.

Darmody (2008) believes that attitude to schooling differ between those students with good attendance records and those with poor attendance records. Those students who consider themselves "below average" within their year group or who have lower educational expectations tend to have significantly higher absenteeism rates. Pickens (2005) argues that to change a person's attitude towards a situation, there is the need to address the cognitive and emotional components, as attitude transformation takes time, effort and determination and can be done through learning and modelling others. Npka (2005) reported of teachers complaining about the difficulty of teaching

effectively when students refuse to bring along to school necessary textbooks, workbooks, exercise books among others.

Onoshakpokaiye (2011) notes that attitude is an individual's prevailing tendency to respond either favourably or unfavourably to an object (person, group of people, institution or event). In his view, attitude has serious implication for the learner, the teacher, the immediate social group with which individual learning relates and the school system as a whole. Attitude can be formed as a result of some opinion or by following the examples of someone like parents, teacher, peer group and friends. According to the researcher, students will learn and be trained if teachers use good methods and have positive attitude towards his or her teaching. Students draw from their teachers' disposition to form their own attitude which may eventually affect their learning outcomes, thus attitude of teachers towards their students must be positive so as to carry the students along. In the researcher's opinion, if a teacher develops a positive attitude towards his or her job, it would make the teacher to work harder towards the success of his students and when students notice that their teachers are hard- working and show concern for them, it motivates them and will result in good performance. The researcher also found out that students' positive attitude towards science subjects could be enhanced by the teacher related factors such as teachers' enthusiasm, resourcefulness and helpful behaviour.

In the same vein, Nakpodia (2011) argues that since the activities of the teachers and students are interdependent, therefore just as understanding of knowledge, skills and attitude of teachers are necessary for providing insights into classroom management and supervisory problems in schools, it is equally important to be aware of the perception of students in terms of their knowledge, skills, abilities, attitude and expectations of the teachers' effectiveness. The researcher notes that the role

of the teacher in helping the students achieve the objective of the instruction in their various fields of endeavour stands paramount.

2.10 Subjects' Schemes Completion and Students' Academic Achievements

Okebukola(1998) asserts that the curriculum is the traditional platform for translating expectations of the society into knowledge, attitude and skills that are expected to be developed or acquired by learners in formal and non-formal settings within the school system. The goals of this process in the researcher's view, is to foster the development of the society in such areas as economic, social, political, cultural, scientific and technological enterprises. Aggarwal (2008) concedes that the curriculum is the base in education on which the teaching – learning process is planned and implemented. It is the totality of all the learning to which students are exposed during their study in the schools in the classroom, laboratory, library, workshop, farm and playground under the guidance of a teacher.

The curriculum as noted by the researcher is a total structure of ideas and activities developed by an educational institution to meet the learning needs of students and achieve desired educational aims. The curriculum has four facets: content, methods, purposes and evaluations. Kolawole (2002) describes curriculum implementation as the process whereby through teaching or instruction, teachers bring the curriculum into contact with students in order to encourage the students to learn in the best possible ways. In the researcher's opinion, teacher's action during the implementation stage of the curriculum depends on:

1. The teacher's level of understanding of the curriculum.
2. Availability of materials for teaching and learning.
3. Conducive environment.
4. Teacher's commitment.

Furthermore, the researcher stressed the importance of workable curriculum in any educational enterprise because in his opinion, it is the curriculum that determines what happens in any educational enterprise. In his view, curriculum is the meeting point for the programme of teaching and learning which is the concern of education or the total learning, planned or unplanned, explicit or implicit, intended or unintended that learners gain from exposure to instruction. He noted that wherever exists a good and workable curriculum, its education facilitates the development and subsequent empowerment of an individual in a way that fosters self-realization so that the individual can realize his goals in life and become a useful and acceptable member of the society. Any curriculum worth its name in the researcher's view therefore, quite naturally will indicate very clearly the context of how to select and organize learning experience (activities) and how to evaluate the success of the education it fosters.

Adewale and Amoo (2003) say explicitness of curriculum design refers to the unambiguous presentation of important concepts and skills and the relationship among them. They are of the view that explicitness of a curriculum is affected by the quality of teachers' decisions made and actions taken at the following five stages of instruction design process: Determining the concept and skills that must be learned; Identifying the important relationship among concept & skills; Developing sets of instructional examples that unambiguously illustrate the range of concepts & skills that must be mastered; Presenting the instructional example to the students.

Ajibade (2014) defines curriculum as all the learning that is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school. The researcher opines that a national curriculum sets out the body of knowledge, skills, attitudes and values that a society wishes to pass on to its youths. The curriculum as reported by the researcher is therefore based on

government policy on education and relevant societal needs based on challenges, the results of research and views of experts as they apply to each level of education aiming to translate societal needs, aspirations and values into an educational programme. The researcher further claims that the curriculum plays the role of expressing the expected educational outcomes in understandable terms, showing how the expected outcomes can be achieved and how the learning that takes place can be measured.

As society changes the skills required for living quality life also change. Secondary education being terminal and at the same time preparatory for higher studies, is now being recognised as the cornerstone of educational systems in the twenty first century. Educators, employers of labour and policy makers are now calling for a closer match between the knowledge, skills, attitude and values that students acquire in schools and those needed to progress in the world of work and to live successfully in the community. Consequently, in order to empower students to function effectively in the twenty first century, a reorganisation and re-orientation of the curriculum must be done taking into account the four pillars of education as recommended by UNESCO, based on the Delors Report (2008) which are: Learning to know, learning to live and learning to be.

In order to effectively empower the learners in the 21st century, the curriculum is expected to foster the following skills:

- a) ICT literacy which includes accessing information efficiently, evaluating information critically and using information effectively and creatively;
- b) Thinking skills such as ability to think critically and creatively;
- c) Social and personal skills (team working, collaboration, networking, interactive communication using technology, ethics and etiquette unique to the world wide web, personal and social responsibility;

- d) Acquisition of skills that underpin entrepreneurship;
- e) Planning, creativity, prioritizing, flexibility and adaptability. (Ajibade, 2014)

Adewale and Amoo (2003) acknowledge that while it is logically impossible to have universal hierarchies of instructional skills, curricular must be organized around explicit instructional priorities. Teaching according to them, is a systematic, rational and organized process of transmitting knowledge, skills, attitudes and values in accordance with certain professional principles. Furthermore, they opine that the curriculum should be organized so that instruction of specific skills and concepts is around critical concepts. The curriculum must be organized so that the greatest amounts of high- priority information and skills can be mastered as efficiently as possible to guarantee quality education at all times. Effective curricula according to them provide for an economical or parsimonious use of time and resources. They contend that emphasise should be given to mastery of concepts, relationships and skills that are essential for the subsequent acquisition and functional generalisation of the skills desired. Okebukola (1998) further notes that non coverage of the curriculum leads to poor quality products from the school system and automatically socio-economic depression.

Denga (2008) argued that even though it would help to have a single standard for school education, it shouldn't be by introducing examinations where everyone has to try and find their bearings. He is of the opinion that teachers should be given a normal, easily defined curriculum first and foremost. In Owolabi's (2004) opinion, validity as a quality test for assessment begins with the coverage of syllabus by the test contents with the assumption that the schools and candidates must ensure coverage as an integral part of their preparation for the examinations. Kimani, Kara and Njagi (2013) found out that inability of the teachers to complete the syllabi contributed significantly to low academic achievements of students in schools. Darling – Hammond and Pecheone (2010)

believe that educators must focus explicitly on creating curriculum guidance and assessments that focus on teaching central concepts in an organized manner in order to improve on students' learning.

Kellaghan and Greaney (2003) also assert that examinations can be used to appraise the educational effectiveness of a curriculum, instructional material and procedures as well as organisational arrangements. Davis and Lee (2008) view curriculum reform as essential in re – engaging students; students who regularly attend school, were concerned that the curriculum should include academic and vocational elements and that there should be better recognition of students achievement. Wasanga and Ramani (2010) further affirm that examinations also provide the basis for evaluating the cost effectiveness of the curriculum at both school and national levels because they enable learning to be measured, thus giving an indication of the success of the curriculum.

World Bank (2005) opine that massive access to schooling and greater differentiation among students are forcing secondary schools to take into account the diversity in students' interests and capabilities so as to maximize students' potentials. They further assert that as students' population grow and become increasingly diverse, responding to differentiated demand may be the only way to prevent student dropout and achieve high completion rates. Thus policy changes for curriculum differentiation include tracking students' performances according to academic ability or achievement or permitting students to choose from a variety of electives, options or curriculum modules that can be sequenced and accredited in different ways. In many subject areas, common tasks can be achieved via different routes and different content with particular attention being given to students who need special support and a longer period to discover and learn important concepts, methods and relationships in core subjects (World Bank, 2005).

In the same vein, Lewin and Stuart (1992) observed that there is always a gap between the large scales, top – down curriculum development initiative at the central level and implementation outcomes at the grassroots of school system. Adamu (1992) also found out that emphasis on the curriculum do not emerge as points of particular emphasis during the teaching of Biology and Physics in secondary schools. Ferrer (2006) believes that assessment instruments must be consistent with the educational expectations or goals a country has adopted through its national curriculum and as such the linkages and communication between the assessment agencies and the professionals responsible for designing the official curriculum should be strengthened. Rwanamiza (2010) is of the view that assessment of students' learning fulfils professional and developmental roles when it is curriculum driven in which case it helps teachers to better educate students.

Nwakoby and Lewin (1992) posited that schemes of work and notes of lesson represent the teachers' working document for implementing the curriculum. These researchers are of the view that schemes of work are an indication of the extent to which teachers had been able to assume direct responsibility for converting the given curriculum and localizing it in the form of schemes and notes of lessons for application to their specific context. Suen and McClellan (2003) insist that uniform syllabi are intended to nullify differences across board so as to bring about good standards. Nakhanu (2012) listed the following as the major content of any teaching syllabus:

1. Topics to be taught at various levels in the school.
2. Specific behavioural objectives
3. The content of all the topics selected for inclusion in the syllabus
4. Materials and suggested activities for teaching listed topics.

2.11 School Attendance, Punctuality and Students' Academic Achievements

Darmody (2008) asserts that poor attendance and lateness have implications in the short term in terms of school completion and poor examination performance. In the long term, those who frequently “skip” school are less likely to progress to further studies. Absenteeism and lateness is found to be lower among students in higher streams and mixed ability groupings. The researcher also found that outside factors such as household labour (especially among females) influence school attendance. The study outlined particular issues for schools, including the level of students' involvement; the nature and delivery of the curriculum; learning support in place as well as the importance of addressing attendance issues early as a means of preventing drop-outs and the longer term impacts of absenteeism. Asikhia (2010) opines that the attitude of some teachers is reflected in their poor attendance to lessons, lateness to school, and poor method of teaching among others which tend to affect students' academic performances in schools.

Davis and Lee (2008) found the main reasons for non-attendance in schools to include bullying, poor relations with teachers, inability to engage with a large organization, sicknesses as well as transitions and transfers. They are of the view that curriculum reforms are essential in re-engaging students. Van- Veen (2008) found out those strategies on prevention and pedagogy were more successful than repressive strategies. He is of the view that attention should be paid to registration (this should include a rapid response system that identifies the reason for non - attendance) and lateness as these are often indications of the beginning of a problem and as such require a rapid and intense response, non-attendance is lower in the researcher's view, if teaching and learning are personalized, if students feel “missed”, if students like to be at school and personal contact with the parents on attendance is vital.

Kimani, Kara and Ngagi (2013) opine that incidences of lateness and absenteeism contributed to low academic achievement of students in schools. Okpa, Bessong, Onete, Etim and Achigbe (2010) believe that regular attendance to school and punctuality will help check examinations malpractices. In the same vein, Jones (2006) concede that excessive absenteeism affects students' achievement and performance, teachers' instruction and effectiveness, principal discipline, administration and funding. The researcher further asserts that non - attendance at school is an early warning sign of future problems that can negatively affect students' achievements. Darmody (2008) argues that school organisations and ethos can make a difference to students' attendance. In particular, students respond to positive interactions with teachers and to higher teacher expectations. Above all he also found out that poor school attendance has implications on school completion and poor examinations performance.

Konstantopoulus (2006) observes that schools with high levels of students' attendance, high proportions of graduates in colleges and low dropout rates had higher average achievement than other schools. Nkpa (2011) notes that failure to attend lessons within the first few days or weeks of resumption of classes especially at the beginning of each term, leads to non-coverage of the prescribed curriculum before the examinations which consequently leads to poor academic performances in examinations. In the researcher's view, there should be in place, a strengthened policy that all learners should be in school to commence classes on the first day of resumption.

2.12 Uniform Assessment Procedures and Academic Standards in Schools

De Grauwe and Naidoo (2004) opine that a major component of school evaluation and reforms includes attempts to improve academic standards and quality through the use of tests and examinations. Examinations according to them are the most popular if not the only tool available, that is used by some countries for quality improvement. These researchers further assert that in

some countries, emphasis on examinations as a measure of school quality results in a focus on uniformity and an emphasis on only those educational purposes that can be measured by objective standardized tests. Thus an examination question paper in their view should provide learners with the opportunity to demonstrate their acquired knowledge and skills. Thus the examination question paper is an important measurement tool and it is vital that its validity, reliability and fairness are established. This is why Okpa et al (2010) are of the opinion that examiners should be very fair and objective in their assessment of the students.

Odada (2007) acknowledges that schools, teachers, inspectors and managers use examination results as a source of pupils and teachers analysis as it offers a feedback on how well teaching and learning was done. Examinations are indispensable tools for evaluating the educational system at the students, schools and systems levels. Examinations in the researcher's opinion, occupy the centre stage in the evaluation system of a number of education systems as they often provide the only data on which students, parents and other stakeholders can make judgement about school quality. De Grauwe and Naidoo (2004) note that emphasis on examinations as a measure of school quality is resulting in a focus on uniformity and an emphasis on only those educational purposes that can be measured by objective standardized tests.

2.13 Scoring Criteria and Uniform Scoring Criteria

Moskal and Leyden(2000) describes scoring criteria as descriptive scoring schemes developed by teachers and other evaluators to guide the analysis of the product or process of students' efforts which are employed when a judgement of quality is required and may be used to evaluate a broad range of subjects and activities. Developing a pre-defined scoring scheme for the evaluation process of any test question reduce the subjectivity involved in evaluating test questions. According to the

researcher, to develop a scoring rubric, the qualities that need to be displayed in a student's work to demonstrate proficient performance must be clearly identified. Scoring rubrics as noted by the researcher, provide at least two benefits in the evaluation process; they support the examinations of students to the extent to which the specified criteria has been reached and secondly, they provide feedback to students concerning how to improve their performances.

Afemikhe (2003) notes that the scoring of any examination must be fair, consistent, accurate and of an appropriate standard. According to him, marking schemes have to be adequate in quality which is also an aspect of standards maintenance. Yoloye (2003) opines that the scoring of examination items is as important as generating good and standardized test items to be administered to the learner. According to him, there is nothing good in an examination if it is not objectively scored. This is why Bassey, Bessong, Onete, Etim and Achigbe (2010) opine that it is part of post-examination ethics for scoring to be made using well drawn-up marking schemes; examiners should be very fair and objective in assessment and; collation and processing of examination scores must be carried out under very strict security arrangements.

Yoloye (1984) suggests that teachers should prepare a detailed marking scheme for each question which is a way of identifying the expected answer in each question and they should also state how many marks to award each answer. Rudner and Schaffer (2002) indicate that when unified examinations scores are used appropriately they help the teachers understand students' strengths and weaknesses to target further instruction. Boston (2002) claims that when scoring schemes are used for large scale assessment, technical questions related to inter-raters reliability tends to dominate literature. The researcher however insists that when good marking schemes are used well, not only do teachers and students receive extensive feedback on the quality and quantity of students' learning, they provide a way to make fair and sound judgements about inter-raters

reliability by setting forth a uniform set of precisely defined criteria or guidelines that can be used to judge students' work.

Darling – Hammond and Pecheone (2010) insist that the Education Districts must ensure extensive moderation of the scoring process to ensure consistency and to enable teachers to deeply understand the standards as well as to develop stronger curriculum and instruction. This according to them is a strong professional learning experience as teachers involvement drives the instructional improvements that bring about improvement in students' learning. Similarly Afemikhe (2003) concedes that teaching is the hub of all educational processes, therefore teachers must be accountable to students, parents and community that have a stake in what goes on in education. According to him, a test is useless if the inferences based on the test are not reasonable that is the test is not valid for the intended use and if the resultant scores contain a great deal of errors which means the test is not reliable. Therefore the scoring must be fair, consistent, accurate and of appropriate standard. He further asserts that marking scheme has to be adequate in quality which is also an aspect of standards maintenance.

Further to this, Okpa et al (2010) believe that scoring must be made using a well-drawn up marking schemes and that the collation and processing of examination scores must be carried out under very tight security arrangement. In the same vein, Owodunni (2010) acknowledges that a standard examination and marking system makes it possible to compare students' abilities and eliminates the chances of false marks, personal interests and bribery. Adikwu (2008) posits that the formulation of detailed direction with regard to the administration and scoring of a test involves the exact materials employed, time limits for the test and instruction and examples details of the test procedure. In the researcher's opinion, the following factors among others can influence a test takers performance on a test: the time the test is taken; availability of test materials and temperament of the test taker.

Perlman (2002) however insists that the scoring schemes should organize and clarify the scoring criteria well enough so that two teachers who apply the rubrics to a students' work will generally arrive at the same score. The researcher is of the opinion that the degree of agreement between the scores assigned by two independent scorers is a measure of the reliability of an assessment. This type of consistency is needed for a performance assessment to yield good data that can be used to develop school improvement plans. Arter (2000) notes that scoring rubrics help us to be more consistent in scoring students and to be more systematic in reporting students' progress.

Nwana's (2007) concedes that one of the universally accepted ways of reducing the effect of differences in the background of markers is by providing them with a marking guide. Marking guides consist of a detailed listing of the major points to be supplied by the pupils as well as the marks to be awarded to such points. In the view of the researcher, if the examination marker is well fed, has had a good rest, has no personal or social problems worrying him, is in a sound state of health, is comfortably seated in a well- lit, cool and well ventilated office, he is most likely to be well motivated, he will concentrate well and his marking will be dependable. If the reverse is the case, his marking will not be dependable. Marking with a scheme has the principle advantage that it produces highly consistent results. All the pupils are being marked on the same terms and the pupils who mention the same points will most likely score the same marks.

Moskal and Leyden(2000) reports that scoring criteria not only function as scoring guidelines but also serve as arbiters of quality and agents of control over what is taught and valued. Similarly, Kaplan and Saccuzzo (2005) believe that many efforts to improve the accuracy of ratters have produced discouraging results since as noted by these researchers, greater abilities, higher spatial aptitudes and critical abilities are all associated with greater accuracy. UMALUSI (Council for Quality Assurance in General and Further Education and Training (2011) believe that the marking

guidelines are the essential starting point for establishing the accuracy of the marking process and hence the validity, reliability and fairness of the results thus:

1. All marking guidelines must correspond with the question papers in terms of both mark allocation and subject matter.
2. The guidelines must also include information on mark distribution within the questions.
3. Marking should be verified and standardized.

2.14 Promotion Policies in the School System and Academic Standards

Nkpa (2005) believes that the essence of examinations is among other things to determine how much learning has taken place. Assessment data in the researcher's opinion should reveal those who have benefited from the learning experiences provided by the teachers in each subject. Those who have not sufficiently acquired in the class the pre-requisite experiences that should form the basis or foundation for successful learning in a subsequent class should ideally not be moved to that subsequent class. The researcher argues that due to pressure from parents, the desire to continue with peers, the wish of school authorities to retain if not increase their population, sometimes the desire of government to create opportunities for greater access and uninhibited movement from one class to the next, many unqualified learners are automatically promoted from one class to the other. In his view, there is the need to return to the system that established minimum standards of performance below which a student has to repeat a class. The researcher advocates the abolition of automatic promotions in our schools. The researcher also reported of teachers complaining about the difficulty of teaching certain categories of students in their classes. These difficult students as noted by the researcher are as a result of automatic promotion prevailing in most states of the federation. When students are massively promoted to the next class without the requisite qualifications, problems are created for the teachers of subsequent classes.

Pierce (2007) however argues that schools are under considerable pressure to maintain acceptable high levels of grade retention as a proof of high standards. In his view, students attach stigma, shame and stress to retention as they recognize that they are not making progress. In the researcher's opinion, this is responsible for the large correlation between school drop-out and grade retention. He recommends that classroom activities should be related to students' culture, knowledge and experience as viable instructional alternatives to retention. In his view, eligibility for promotion should be based on multiple measures rather than on a single test.

2.15 Standardized Process of Constructing Examinations Items

Examinations items are individual questions or tasks in an examination. Suen and McClellan (2003) argue that a good item design and construction process is one that follows the principles of discrimination, score variance, reliability and evidence of validity for the intended interpretation and use of scores from the overall test. According to these researchers, item writers must be individuals knowledgeable in the field and as such are able to understand the test specifications. The West African Examinations Council [WAEC, (2011)] listed the following items to be among the variety of issues to be considered when designing a test:

1. The topics and materials to be tested.
2. The kind of questions to be constructed.
3. The test formats to be used
4. The test length.
5. When, where and how the test will be administered and
6. How the test will be scored.

Writing test items is a matter of precision, perhaps more akin to computer programming than to writing prose. A test item must focus the attention of the examinee on the principle or construct

upon which the item is based. In the view of the Examination Body, students who answer a test item incorrectly will do so because their mastery of the principle or construct in focus was inadequate or incomplete. Any characteristics of a test item which distracts the examinee from the major point or focus of an item reduces the effectiveness of that item. Any item answered correctly or incorrectly because of extraneous factors in the item, results in misleading feedback to both examinee and examiner (WAEC, 2011). The Examinations Body equally suggest that in order for test items to be valid and reliable, raw test items must:

1. Be edited by officers that are knowledgeable and have been trained on appropriateness of content, difficulty, language, resources and how to identify potential sources of bias.
2. Edited items that are acceptable should be incorporated into prototype test papers and trial tested on a representative samples of students.
3. Thereafter, field tested data are analysed statistically to determine the difficulty levels and the extent to which each item discriminates among candidates' ability levels.
4. Moderating committee made up of experienced educators trained on how to review items then scrutinize each item and its associated data.
5. Necessary modifications are made to the items and those that scale through all the review stages are classified and kept in the item bank from where test papers are built in accordance with the table of specifications.

Rudner and Schaffer (2002) assert that any kind of test can be standardized if uniform scoring and administrative procedures are used. This means that comparing of students' scores is possible. Bello et al (2010) opine that item writers should ensure that examination papers are of correct standard for the candidates they are meant for by ensuring that the examination questions are based on the objectives and the course contents outlined in the examination syllabus. According to the

researchers, moderators are to ensure that the items are technically correct and accurate, offering the best way of testing the concepts, principles or knowledge they are intended to test. They should ensure that the task is clear in each item and the person attempting an item knows what is expected of him or her.

Owolabi (2004) reaffirms that inputs into an assessment instrument determine the outcomes while the outcomes simply demonstrates its quality. Thus examination bodies as noted by the researcher, should have skilled personnel to undertake item development exercises. Robin and Clarke (2011) regard standardized examinations as those examinations that are designed, administered, analysed and reported in the same way for all students. Adikwu (2008) sees standardized tests as tests that provide uniform sets of questions, instruction and methods of administration. In the view of the researcher, they are tests that are carefully constructed by expert test developers and have items of known psychometric properties and standard conditions for grading and interpreting scores. The researcher further assert that standardization of test also include the following steps: content analysis, review of instructional objective, development of a test blue print or table of specification, writing test items, face validation of test items, trial testing and item analysis.

UMALUSI(2011) assert that an examination question paper should provide learners with the opportunity to demonstrate their acquired knowledge and skills as such the examination question paper are an important measurement tool and it is vital that its validity, reliability and fairness are established. The Examination Body furtherrecommends the moderation and audit of a sample of the examination question papersas pre-requisites for the conduct of quality and standard examinations. Adedokun (2012) equally listed the general principles of test construction to include: statement of the objectives; specification of the content to be covered; preparation of the test blue print; preparation of the test items; trial testing and item analysis. However Nwana (2007)

argues that for a test to be standard enough to enable cross-group comparisons, a number of characteristics of individual test items of which the test is composed will need to be ascertained. Also a number of characteristics of the resulting test or examination developed will need to be determined. Kaplan and Saccuzzo (2005) assert that testing requires standardized conditions because situational variables can affect test scores.

2.16 Standardized Achievement Test and Teacher Made Test

Emaikwu (2008) defines test as one of the instruments for evaluation and accreditation in schools that is used for determining difficulties and level of mastery of examinees. The researcher notes that tests are structured exercises or questions which require the respondents to display a pre-determined behavioural trait. It is an instrument used to elicit a type of behaviour or competency one is interested in finding out about. The researcher believes that tests are used to determine the presence or absence of certain kind of psychological trait in an individual. He notes that tests are sets of questions, tasks or problems intended to measure an individual's knowledge, aptitude, intelligence and other traits. Eya (2001) defines a standardized test as any form of test that requires all the test takers to answer the same questions or a selection of questions from a common bank of questions in the same way and that is scored in a "standard" or consistent manner which makes it possible to compare the relative performance of individual students or groups of students. The term is largely associated with large scale tests administered to sizable populations of students.

Jennings (2011) defines standardized achievement tests (SAT) as examinations that are composed, administered and scored in the same manner for everyone taking them and the teacher-made test as those tests that are designed to measure the knowledge or proficiency of an individual in something that has been learned or taught. Defenders of standardized testing say the process helps gauge intellectual aptitude in an unbiased, consistent manner, and can help universities fairly compare

students from across the country, or across the world. But critics of the SAT and other standardized tests say they discount imagination, creativity, and other qualities of well-rounded students, and may be biased in favour of students who are not necessarily smarter, but more comfortable with empirical testing methods. But standardized tests are also seen as a way to fight the rampant corruption and grade-buying that is seen as endemic in Russian high schools and higher education (Olga, 2009).

Davis (1999) is of the view that standard examinations are the most comprehensive form of assessment which is typically given at the end of the term while teacher made tests are more limited in scope, focusing on particular aspects of the course material. Konstantopoulos (2006) defines standardized test as tests that are administered and scored in a consistent manner to ensure legal defensibility and a non - standardized test as any test that is usually flexible in scope and format, variable in difficulty and significance. Yoloye (2008) views standardized tests as tests that cover a common curriculum in several schools and which has been trial tested on a representative sample of students so that norms have been established for the test. The teacher made test as noted by the researcher, is usually constructed by the class teacher for the purpose of getting feedback on students' learning.

Ogbonna (1993) contends that the teacher made test is constructed by the classroom teacher for usage in a particular class under conditions of choice by the teacher which try to measure pupils' achievement. While standardized tests in the researcher's view, are constructed by a group of individuals rather in a team with each team member contributing possible test items. The researcher further listed the advantages and disadvantages of the teacher made and standardized tests to be:

Advantages of the teacher made test:

1. Individual teacher knows his class better than anyone else and as such he is in a better position to give tests to his students
2. The class teacher knows the traits or qualities he wants his class to acquire.
3. The teacher constructs the test to suit the methodology used in his teaching.
4. The test is made to measure suitable areas which the teacher thinks is important to achieve a determined educational objective particularly at the local level.
5. It is not expensive to construct in terms of monetary expenditure.

Disadvantages of teacher made test:

1. They are often carelessly constructed or made to a narrow area of the curriculum especially the essay type.
2. Their interpretations by the teacher are sometimes inaccurate.
3. They are not standardized, thus they may be below or above standard.

Advantages of standardized test:

1. They are carefully designed.
2. They are pre-tested to determine levels of difficulty of the test items and amount of testing time required of scores.
3. They are ideal for making objective comparison of standards among schools.
4. They serve a wider population.

Disadvantages of standardized test:

1. They are expensive to construct.
2. They take much longer time to construct.

3. They may not be able to completely serve the needs and purpose of every local situation.

The researcher concluded by saying that both types of tests serve different purposes and situations in the teaching and learning process. As noted by this researcher, the purpose of testing is to determine the degree of normality or abnormality in pupils' performances which is done by relating the pupils to the total or wider population, the standardized tests in the researcher's opinion, satisfy this criterion. Omebe (2001) defines standardized test as test that provide methods of obtaining samples of behaviour under uniform procedures: same set of questions are administered with the same set of direction, timing constraints and scoring procedures usually they are norm referenced. Similarly, Ikponwosa (2002) gave a list of some of the differences between standardized tests and teacher made tests:

Standard Test:

1. Generally prepared by specialists who know very well the principles of test construction;
2. Prepared very carefully following principles of test construction;
3. Given to a large proportion of the population for which they are intended for the computation of norms.

Teacher-made test;

1. Made by teachers who may not know very well the principles of test construction;
2. Often prepared hurriedly and haphazardly to be able to meet the deadline for administration;
3. Usually given only to a class or classes for which the tests are intended; usually, no norms are computed.

In Ali's (1989) assertion standardized tests are those tests constructed by a group of individuals who are specialized in test construction rather than a single person. In his view, each team member

contributes possible test item and help in vetting those of others. While teacher made tests are those tests that teachers use to collect quantitative information on the basis of which he can judge the degree and adequacy of a pupil's achievement of the necessary skills in a subject area. The researcher further asserted that in planning to construct a test, the teacher should ask himself the following questions:

1. Who and what class is the test for?
2. What type of objectives is emphasized during teaching that should be measured?
3. What type of measuring instruments or techniques would be used in measuring them?
4. If test, what type of test; objective or essay/
5. If objective test, at what level of learning would they be constructed?

The purpose of teacher made test in the researcher's view, is to assess how much of the teacher's instructional objectives the pupils have achieved after being taught the lesson as the instructional objectives are based on the course content and as such to evaluate the pupils' achievement, the teacher should ensure that these test items cover the assessment of the mastery of the learning materials by the students and the learning or mastery of the materials is tested at the relevant levels of educational objectives. Okwelle (2005) presented evidence to the effect that teacher made test in chemistry were not valid. The study revealed that test items were more of factual questions type which greatly emphasized the measuring of the learners' thinking abilities but sparingly test their performances in the areas of perception, attitude and manipulative skills. In the same vein, Adikwu (2008) observed that teacher made test, developed and used for assessment of the students at the secondary school level are deficient in the most important quality expected of all achievement test which is content validity. Most teachers were found to lack or failed to demonstrate the basic competencies in test construction and validation, they rather tend to select and test their students on

few of the contents and objectives of their classroom instruction thus making their evaluation lopsided. In his view it is imperative for teachers to acquaint themselves with the procedure for test development and standardization to enable them develop valid and reliable test instruments to evaluate their students.

2.17 Validity and Reliability Issues in Assessment Instruments

Yoloye (2008) affirmed that a test is valid if it measures adequately what it is supposed to measure and reliable if it is to yield the same scores for the same pupils no matter who marks the test. According to him, test items can be assessed in a qualitative way before they are administered to pupils as this helps in checking the test items' validity and ensuring that the test items are well written and unambiguous. The researcher view reliability as the ability of a test to yield the same scores for the same pupils no matter who did the marking. Ogbonna (1993) agrees that a valid test is a test that measures what it claims to measure or nothing else. A valid test is expected to possess relevance for a particular kind of measurement. The researcher listed the following questions as relevant in determining the validity of a test: what does the test actually measure? To what extent does it measure a particular ability, quality or trait? and in what situation or under what condition does it have this degree of validity? The researcher believes that in estimating the reliability of a test, the peculiar characteristics of the test must be carefully taken into account by: Estimating the limits of error; calculating the standard error of measurement and calculating the coefficient of reliability.

Agwu (2001) sees validity of any educational system as being dependent upon the quality of the teaching and the availability of competent teachers. Nwana (2007) defines validity as the extent to which a test measures whatever it is designed to measure and reliability as the extent to which the test measures consistently whatever it is measuring. The researcher further asserts that an

achievement test is valid if: the questions are set from all aspects of the syllabus; if the number of questions set in each section reflects the relative importance of the sections and if the questions set test all the intellectual skills expected to result from the course which reflect knowledge, comprehension, application, analysis, synthesis and evaluation. The researcher asserts that the contents of many public school examinations show that:

1. Some examinations entirely omit vital areas of the syllabus.
2. Some examinations over-emphasize areas of the syllabus far beyond their implied importance.
3. Some examinations under-emphasize areas of the syllabus far below their normally implied importance.
4. Some examinations include questions from areas not covered at all by the syllabus.

According to the researcher, this is common to all school subject examinations where the examining authority has not taken enough pains to instruct and direct its examiners on the need for producing valid examinations. In his view, to ensure that the principle of content validity is taken into consideration, test compilers should ensure that provision is made for it at the planning stage. The table of specification presents the number of test items from each syllabus section and for each cognitive objective. It provides the operational blue print which guides the test builder and ensures that he builds a test that will do what it sets out to do. In the same vein, Braun, Kanjee, Bettinger and Kremer(2006) describe validity as one of the core principles on which assessment is based. Validity in their opinion is the extent to which a test actually measures what it claims to measure.

Andala et al (2014) regard reliability index of a test score as the indicator of its stability which may mean the stability of test score over time as indicated through test re-test, stability of item scores across items through internal consistency or stability of items ratings across judges or ratters of a

person, object or event through internal reliability. The researchers believe that reliability scores have long been the primary condition to be met for any assessment procedure to be a sound measurement while the reliability coefficient is the piece of evidence that operationalizes the values of accuracy, dependability, stability, consistency and precision. Kaplan and Saccuzzo (2005) concede that reliability is the accuracy, dependability, consistency or repeatability of test results or the degree to which test scores are free of measurement errors. The researchers regard validity as the meaning and usefulness of test results. According to them, it is the degree to which a certain inference or interpretation based on a test is appropriate. It is a unitary concept that represents all of the evidence that supports the intended interpretation of a measure. In their view, attempting to define validity of a test will be futile if the test is not reliable, as it is logically impossible to demonstrate that an unreliable test is valid.

2.18 The predictive validity of examinations

Aggarwal (2008) define written examinations as tests that are commonly used in schools, which could be either the essay type or the objective type which are useful for getting evidence on attainment of knowledge, ability to analyse a problem critically or to recall and organise a relatively large amount of material. Adedokun (2012) regard predictive validity as the ability of a test to predict future performances in a particular area. It allows students to see how they are progressing in the course and highlights if they need to amend their study strategies to perform better. In the researchers view, mock examinations reduced the students' anxiety of sitting for the real examinations. Andala et al (2014) assert that mock or internal examinations are used as a measure or a predictor of performance in external examinations. Most teachers use the mock examinations to gauge students' performances and develop more refined revision strategies. In the researchers' view, the reasons for doing mock examinations include:

1. Mock examinations are used to gauge what level students. Such that any teacher who pays attention to the student should use the mock to have an idea of what the student would get in the main exams.
2. Mock exams put students in an exam and emulate requirements of the main exam council conducted by the national exam council.
3. The methods the students use in answering the questions give them a bearing on how they are likely to answer actual examination hence giving teachers an idea on how to correct their mistakes. It also gives the students the technique and the style of questions.
4. Under special circumstance, mock examination can be used to validate the WAEC examinations indicating the importance the examination body put in the mock
5. Currently most universities and colleges admit students based on their mock results.
6. It is an excellent way of seeing how much the students can remember, discovering their strengths and weaknesses and practicing their examination times
7. Mock examination help students to overcome nervousness and will almost certainly ensures a high mark in the real exam
8. Mock exam act as a springboard for the students into a longer term development process of academic skills acquisition. It is characterised by huge investments in terms of financial and human resources. It is thus expected that the learner's performance in the mock examination will promote or enhance his/her performance in the national examinations. In the opinion of the researchers, mock examinations should be used to predict the main examinations only if the two examinations are done under the same conditions (Andala et al, 2014).

Omirin and Ale (2008) are of the view that mock examinations are teacher made tests prepared by the school teachers and administered to students towards the end of the second term when those

classes are supposed to have covered their syllabus. As a trial examination, it is selective, predictive and diagnostic in nature. In their opinion, mock examinations are supposed to reveal how successful teachers' instructions have been mastered. Mock examinations being predictive in nature, can be used for selection of students who will succeed in further academic endeavours. The researchers found significant positive correlation between students' scores in WASSCE and Mock Mathematics and English Language. They recommended among others, that Mock examinations should be centralized (at least) in the Local Government Areas and supervised by the Area Education Officers in the Local Government Areas since it can significantly predict performances in WASSCE. They also recommended that mock examinations should undergo some process of standardization to be able to compete favourably with WASSCE which is a standardized examination.

Their findings however contradict the earlier findings of Obioma and Salau (2007) who found poor correlation between students' performances in public examinations and their performances in the universities. The researchers recommended an improvement in the quality of assessment instruments used in both public and university examinations and mandatory inclusion of experts in measurement and evaluation in the post – university matriculation screening committee. Omole and Olojede (2011) believe that the problem facing the effectiveness of mock examinations in effectively predicting students' performances in external examinations is the lack of enough qualified subject setters who are trained markers. The researcher opines that subject panels should be formed in the Education Districts to set, moderate, proof read and mark mock examinations.

2.19 Examination Administration and Supervision as Indices of Quality in the Educational System

Ojerinde and Kolo (2010) assert that qualitative education is a thing desired in schools so that the standards of education in our schools can be highly improved, proper administration and supervision of our examinations (whether public or institution- based) must be accorded high priority. According to these researchers, the administration of an examination is a crucial determinant of its ultimate success or otherwise. Baker (2003) asserts that the effective and ethical use of unified examination test scores requires that the examiner must be proficient in test administration and understand the basic measurement and statistical concepts behind the interpretation process.

Wasanga and Ramani (2010) posit that monitoring is an activity that is carried out periodically during the administration exercise of an examination for the purpose of auditing the authenticity of the exercise in terms of adherence to prescribed procedure. They further claim that the key aspects that should be monitored include: specifications for sitting arrangement; security arrangement; number of supervisors and invigilators per examination centre; qualification of supervisors and invigilators; examination irregularities and role of school administrator during the examinations. Onasanya (2010) views supervision as a way of stimulating, guiding, improving, refreshing encouraging and overseeing certain group with the hope of seeking their co-operation in order for the supervisors to be successful in their task of supervision. It is an interaction between at least two persons for the improvement of an activity. Jaiyeoba and Atanda (2011) view supervision as a quality assurance mechanism in education and as one of the factors that influence students' performances in schools. They equally found a positive relationship between supervision of instruction and school quality.

Okpa, Bessong, Onete, Etim and Achigbe (2010) identified inadequate supervision by inspectors as among the numerous causes responsible for examination leakages. In these researchers' view, the three most important groups during an examination are the candidates, invigilators and supervisors. They further assert that for the successful conduct of any examinations, the supervisors must not;

1. Be in possession of question papers after the commencement of the examinations.
2. Read the contents of any question paper or explain same to the candidates.
3. Bring into the examination hall any printed matter.
4. Read novels, newspapers or engage in any activity that will distract his or her attention during the examinations.
5. Invigilate his or her subject area.
6. Engage in conversations within or outside the hall during examinations.

Ojerinde and Kolo (2010) are equally of the view that supervisors' attitude during examination administration plays a major role in determining the credibility of any examination. They believe that supervisor with negative attitude to supervision will fail to follow the procedure and regulation in the guidelines which could result in practical demonstration of mass cheating in the examination centres. Thus the supervisors play the most crucial role because they take charge of every centre and supervise all the invigilators placed under them. In addition to this, Tsogdov (2012) opine that quality in education is synonymous with meeting professional standards through a system of supervision, inspection and control. Adeogun and Osifila (2008) found out that teachers who regularly monitor and supervise their students' learning by checking students' work and helping individual students to overcome errors and learning difficulties are likely to have students who exhibit higher order level of achievement.

Kaplan and Saccuzzo (2005) believe that a test manual should spell out clearly the direction for administration and such directions should be sufficiently detailed to be duplicated in all situations in which the test is given. In their opinion, a good test manual gives examiners instructions that include the exact words to be read to the test takers. It also includes questions that testers will likely ask and instructions on how administrators should answer them. They further assert that examination administrators must consider that the test or examination may not remain valid or reliable if they deviate from the specified instructions. In addition to this, Ojerinde and Kolo (2010) listed the following as the major functions of supervisors during examinations:

1. Pre – examination arrangement, examination administration, post examination activities, used and unused examination materials.
2. Conduct of invigilators and the presence of security outfits.
3. How the examination materials are parcelled and when they are handed over to the custodians.
4. Used and unused answer sheets and question papers.
5. Attestation where the names, designation and signature of the supervisor are elicited.

2.20 Global trends in Unified Examination Programmes

Unified examinations can be said to serve the purpose of assessment and evaluation in the education industry. In the United States of America for instance, unified examinations have been used to assess schools since 1965 when the U.S Elementary and Secondary Education Act became a law (Popham, 2011). Countries such as the United Kingdom and France require all their secondary school students to take a unified examination on individual subjects as a requirement for graduation. In these cases, the examinations are used to assess a student's proficiency in specific subjects such as Mathematics, Science or Literature. Olga (2009) claims that in 2003, the Ministry

of Education in Russia launched the Unified State Examination Programme. The examination is administered to the students before they can graduate from high school and also aids their placement in higher institutions. In these countries and indeed most countries of the world, unified examinations are standardized examinations.

Most of the researches done in this area in North America use the term 'standardized test' or 'standardized testing' rather than 'unified examinations'. Begawan (1998) asserts that in North America, unified examinations are typically administered to students wishing to enter university in highly competitive fields. As noted by the researcher, in some countries, like Japan, China, Malaysia, Singapore and Brazil students must write the unified examinations for entrance into any first year programme because in countries with free post-secondary education systems, some method is required to reduce the number of applicants to what the universities can admit and educate.

Begawan (1998) also reiterated the fact that in Countries in the Southeast Asian Ministers of Education Organization (SEAMEO) region whose members and associate member countries include: Brunei; Darussalam; Cambodia; Lao PDR; Indonesia; Malaysia;; Philippines; Singapore; Thailand; Vietnam; Australia; Canada, France; Germany; Netherland and New Zealand unified examinations come in form of summative examinations. These examinations are conducted in each grade and students who do not meet the required criteria are not promoted to the next higher grade. At the state level many of the SEAMEO countries use the standardized norm- referenced form of examinations (Begawan, 1998).

Similarly Kellaghan and Greaney (2003) assert that in most African countries, unified examinations take the form of public examinations. Most African countries in the researchers assertion, operate

three major examinations which are administered by an agency outside the school: at the end of primary schooling when students are examined in major subjects of the curriculum, after three years of secondary, the results determine who will move on to higher grades of secondary education and at the end of secondary education, the results will affect students further educational and vocational prospects. In Nigeria, apart from Lagos State, Ogun and Ekiti states have equally adopted the Unified Examinations Programme for the students in their public secondary schools. According to Olugbile (2012) Ogun State adopted the unified examination programme in January, 2012 in order to provide qualitative and affordable education for its students as well as improve on their performances in promotional and external examinations.

Adebule (2013) carried out a study on Differential Item Functioning in Ekiti State Unified Mathematics Examinations (ESUME) for Senior Secondary School Students. The study examined if differently functioning items were used in Ekiti State Unified Mathematics Examinations and also to confirm if the test items functioned in different ways for different sub-groups of test takers. Mean, standard deviation and student t-test were used to analyse the data generated. The result obtained from a sample of four hundred randomly selected senior secondary schools students showed closeness in the means and standard deviation of the scores of the group of testees indicating that the testees were of comparable ability levels. The results concluded that the items in the ESUME did not function differently among the testees on the basis of gender, age, parental qualifications and location. It recommended that differential item functioning procedure for declaring item bias should be carried out on all items of the various subjects' examinations by experts.

The study on "Issues in Test Item Bias in Public Examinations in Nigeria and Implications for Testing" was carried out by Emaikwu (2012). The study looked at the meaning, types and sources

of item bias as well as different methods of detecting it in a testing situation. The study also identified many methods of detecting test item bias in the measurement of ability: item characteristic curve, regression method, chi-square method and transformed item difficulty method. The study recommended that examination bodies should construct test items in such a manner that items are free from writing errors such as wordiness, irrelevancy, offensiveness and excessive stimulations so that when an inadequacy exists between groups' examination scores, the disparity will be attributed to true differences in whatever the test purports to measure in the examinees.

2.21 Summary of the Literature and Gaps in Knowledge

Relevant literature has been reviewed with focus on concept of unified examinations, meaning and types of evaluation, quality education, factors that can affect students' achievements, uniform assessment procedures, examination administration and supervision and unified examinations in developed and developing countries. The review of literature revealed that with regard to scoring and promotion criteria, Afemikhe (2003) insists that marking schemes have to be adequate in quality while Yoloye (2003) affirms the need for the objective scoring of examinations answer sheets. Bassey, Bessong, Onete, Etim and Achgbe (2010) however viewed scoring of examinations with well - drawn up marking schemes as part of post- examinations ethics. In the same vein, Boston (2002) claims that when good scoring schemes are well used, they provide a way to make fair and sound judgement about inter-raters reliability. Owodunni (2010), Adikwu (2008), and Moskal (2000) equally concede that a standard marking scheme makes it possible to compare students' abilities and eliminates the chances of false marks, personal interests and bribery. These researchers however did not look at scoring schemes from the perspective of uniformity of scoring in unified examinations programmes. Nkpa (2005) argues that the essence of examinations is to determine how much learning has taken place. While Pierce (2000) asserts that eligibility for

promotion should be based on multiple measures rather than on a single test. The researchers failed to address the issue of uniform promotion criteria in a unified examinations programme setting.

Ojerinde and Kolo (2010) assert that proper administration and supervision of examinations are prerequisite for improvement of the quality of education in the schools. While Baker (2003), Wasanga and Ramani (2010), Onasanya (2010), Jaiyeoba and Atanda (2011) believe that the test or examination may be invalid if they deviate from the specified instructions. They however did not consider uniformity in examination administration and supervision from the perspective of unified examinations.

Adewale and Amoo (2003) assert that the curriculum should be organized so that the greatest amounts of high – priority information and skills can be mastered as efficiently as possible to guarantee quality education at all times. Similarly, Denga (2008) believes that teachers should be given a normal, easily defined curriculum. In the same vein, Owolabi (2004) affirms that validity as a quality test for assessment begins with the coverage of syllabus by the test contents. Kimani, Kara and Njagi (2013) found out that inability of the teachers to complete the syllabus contributed significantly to low academic achievements of students in schools. Darling – Hammond and Pecheone (2010) equally assert that educators must focus explicitly on creating curriculum guidance and assessment that focus on teaching central concepts in an organized manner in order to improve on students' learning. Lewin and Stuart (1992) observed that there is always a wide gap between the large scales, top – down curriculum development initiative at the central level and implementation outcomes at the grassroots of school system. Nwakoby and Lewin (1992) posited that schemes of work and notes of lesson represent the teachers' working document for implanting the curriculum. Similarly Suen and McClellan (2003) assert that uniform syllabi are intended to

nullify differences across board so as to bring about good standards. These researchers however failed to examine the effects of uniformity in the completion of the subject schemes on the performances of students in unified examinations.

Ogunleye (1999) posited that students develop negative attitude to science learning due to the fact that the teachers are unable to satisfy their aspirations or goals. Asikhia (2010) identified negative attitude of some teachers to their jobs as is reflected in their poor attendance to lessons, lateness to school and poor teaching methods as being responsible for students' poor academic achievement. Similarly Darmody (2008) asserts that students who consider themselves to be below average within their year group tend to have higher absenteeism rates. In the same vein, Onoshaikpokaiye (2011) posits that students will learn if teachers have positive attitude towards his teaching. Nakpodia (2011) equally insists that an understanding of the knowledge, skills and attitude of both teachers and students are necessary for providing insights into classroom management and supervisory problems in schools. These researchers did not research on how teachers' and students' attitude to school and schooling impact on their school attendance patterns in unified examinations programmes settings.

Suen and McClellan (2003) are of the view that a good item design and construction is the one that follows the principle of discrimination, score variance, reliability and evidence of validity for the intended interpretation. WAEC (2011) asserts that writing test items is a matter of precision, in the view of the examination body, any characteristic which distracts the examinee from the major point or focus of an item reduces the effectiveness of that item. In the same vein, Bello (2010) assert that item writers should ensure that examination papers are of correct standard for the candidates they

are meant for. While Owolabi (2004) agrees that inputs into an assessment instrument will determine output. Similarly Adedokun (2012) listed the preparation of the test blue print, trial testing and item analysis as some of the as some of the principles of test construction. However non of these researchers looked at the standard process guiding test items construction in a state unified examinations programme

Adedokun (2012) asserts that the ability of a test to predict students' future performances allows the students to see how they are progressing in the subject. Andala (2014) equally believe that mock or internal examinations are used as a measure or a predictor of performance in external examinations. While Omirin and Ale (2008) believe that trial examinations are selective, predictive and diagnostic in nature. Obioma and Salau (2007) however found poor correlations between students' performances in public examinations and their performances in the universities. Olojede (2011) asserts that the main problems of mock examinations in predicting students performances in external examinations is the lack of qualified subject setters who are trained markers. The researchers however did not look at the issue of students performances in unified examinations being used to predict their performances in a standardized achievement test. Thus this work will be able to fill the gaps in the literature of unified examinations programmes generally and in Nigeria in particular.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter outlines the procedures and methods adopted in carrying out the research with respect to: Research design, study area, population, sample and sampling procedures, instrumentation, pilot study, procedure for data collection, recruitment and training of research assistants, administration of instruments and procedure for data analysis.

3.1 Research Design

The research design used for this study is the descriptive survey design. A survey was considered appropriate because it facilitated the collection of factual information that best described the existing phenomena, answered the questions that were raised and solved problems that were posed or observed. The Context, Input, Process and Product (CIPP) model by Guba and Stufflebeam (1970) was used for this assessment. It was considered appropriate for this study because it took care of all the possible variables of interest in the study. This enabled the researcher to assess the context in which the Unified Examination programme was implemented, inputs that influenced programme implementation, the processes or strategies employed in programme implementation as well as the products of the programme;

Context variables: The unified examinations programme personnel at the Ministry of Education and the examination administrators' variables like highest professional qualifications, years of working experience and years of supervising the unified examinations; the quality of the unified examinations questions; teachers' and students' attitude to the unified examinations programme.

Input variables: availability and adequacy of uniform assessment procedures: Uniform schemes of work, time table, conference marking, scoring and promotion criteria for the unified examinations.

Process variables: Modes of administering and supervising of the unified examinations. The usage of uniform schemes of work, time table, conference marking, scoring and promotion criteria for the unified examinations.

Product variables: The level of attainment of the unified examinations programme objectives will be evaluated here in terms of uniformity in students' assessment procedures, curriculum implementation, improvement in the school attendance patterns of both teachers and students and whether or not there has been any improvement in the quality and standard of education in the state.

Table 2: Assessment Framework Based on the CIPP Model

EVALUATION TYPE	VARIABLES OF INTEREST	DATA SOURCE	INSTRUMENT FOR DATA COLLECTION	RESEARCH HYPOTHESIS ADDRESSED
<p>Context: To report on Unified Examination</p> <p>1. Personnel and Administrators; Professional qualifications, years of working experience and years of supervising the examinations.</p> <p>ii. Quality of the unified examinations questions.</p> <p>iii. Science teachers and students: Characteristics as indicated by their demographic data and their attitude to the unified examination programme</p>	<p>Unified Examinations officers and Administrators; highest professional qualifications and experience.</p>	<p>Programme personnel at the Basic Education Service Dept.</p>	<p>Programme Assessment Questionnaire (PAQ, BES version)</p>	<p>6</p> <p>4a and 5a</p>
	<p>Standard of the unified examinations questions.</p>	<p>Unified Examination Administrators</p>	<p>Administration and supervision questionnaire (ASUEQ)</p>	
	<p>Teachers and students characteristics: Age, gender, favourite subject, years of teaching experience and qualification.</p>	<p>Programme personnel at the Basic Education Service Dept.</p>	<p>Programme Assessment Questionnaire (PAQ, BES version)</p>	
		<p>Science teachers and students.</p>		

<p>Input i. To identify the resources available for the success of the Unified Examinations Programme in Lagos State Public Schools and their adequacy.</p>	<p>Availability and adequacy of uniform assessment procedures: uniform schemes of work, time table scoring and promotion criteria.</p>	<p>Heads of Science Dept and Science teachers</p>	<p>Teachers' Assessment Questionnaire (TAQ) and Programme Assessment Questionnaire (PAQ).</p>	
<p>Process To report on: Mode of administration and Supervision of the Unified Examinations. Usage of uniform: a. Schemes of work. b. Scoring criteria. c. Promotion criteria and d. conference marking. e. Timetable</p>	<p>Mode of administering and supervision of the unified examinations. Usage of unified: schemes of work; Marking guide; Scoring criteria, promotion criteria, conference marking and timetable.</p>	<p>The Unified Examinations Administrators. Science Teachers</p>	<p>Administration and Supervision of Unified Examinations Questionnaire.(ASUEQ). Programme Assessment Questionnaire (PAQ, Teachers' version).</p>	<p>2a and 2b 1a , 1b, and 3</p>
<p>Product To report on: i. Completion of the Science subject scheme/ syllabus. ii. Performances of Students in chemistry achievement test and Attendance patterns of teachers and students.</p>	<p>Curriculum implementation. Teachers and students school attendance pattern. Students' performances in chemistry achievement test. The quality and standard of education in Public Secondary Schools in Lagos State. Teachers' and students' attitude to the unified examinations programme.</p>	<p>Heads of Science Dept. Chemistry Achievement Test (CAT).</p>	<p>Teachers' Assessment Questionnaire (TAQ). Chemistry Achievement Test (CAT) Teachers' Assessment Questionnaire (TAQ) and Students' Attitude to the Unified Examinations Questionnaire (SUEQ)</p>	<p>4b, 5b and 7</p>

Table 2 shows the assessment types that were carried out in the context, input, process and product categories:

Context Assessment:

The unified examinations programme personnel and administrators variables such as highest professional qualifications, years of working experience and years of supervising the unified examinations were assessed; the quality of the unified examinations questions and the attitude of the teachers and students were also assessed.

Input Assessment

The availability and adequacy of uniform assessment procedures such as uniform schemes of work, scoring, promotion criteria and time table were assessed in this category.

Process Assessment

The process assessment was used to determine the usage or otherwise of the uniform assessment procedures identified in the input assessment as well as the modes of administering and supervising the unified examinations.

Product Assessment

This looked at the outcome of what had been put in place and used in the context, input and process categories in terms of curriculum completion, standard of the unified examinations and the school attendance patterns of the teachers and students.

3.2 Study Area

This study was carried out in Lagos State of Nigeria. Lagos State was chosen for the study because it is the State that pioneered the Unified Examinations Programme in the country and as such it has been conducting unified examinations for the past fifteen years, the longest in Nigeria hence its choice as the study area. Lagos State is geographically located in the south- west of Nigeria. It was created on May 27th, 1967. It is the commercial nerve centre of the country. It has twenty local government areas and thirty seven Local Council Development Areas (LCDA) and has an estimated population of twenty one million, three hundred and four thousand, five hundred and eighty three

people and a land mass and water area of three thousand, five hundred and seventy seven square metres (Lagos State Bureau of statistics, 2012). Lagos State has total of six hundred and fifty eight public secondary schools (three hundred and eleven senior secondary and three hundred and forty seven junior public secondary schools) spread into six Educational Districts (Annual Schools Census report, Lagos State Ministry of Education, 2012). The study was carried out in all the six Education Districts in the State.

3.3 Population of the Study

The target population of this study comprised all the unified examinations programme personnel at the Basic Education Service Department of the Lagos State Ministry of Education, the unified examinations programme administrators (unified examination administrators at the Education Districts, the principals and vice principals of the public secondary schools), Heads of Departments, teachers and all the senior secondary school two (SS2) students in Lagos State public secondary schools. The SS2 students were chosen for the study because as semi-final year students, it was expected that they would be better focused than their SS1 counterparts. The SS3 students on the other hand were busy preparing for their external examinations.

3.4 Sample and Sampling Procedures

The sampling procedure used for this study was multi-stage sampling technique. This is because the respondents were randomly selected from the Ministry of Education, the six Education Districts, the Education Zones and the Secondary Schools hence the random selection had to be in stages. There are six Education Districts in Lagos State, subdivided into twenty Education Zones according to Local Government Areas. Two education zones were randomly selected from each Education District. Simple random sampling technique was used to select:

- a. Forty eight (48) senior secondary schools (eight senior secondary schools from each Education District).
- b. Twenty two SS2 science students from each of the randomly selected senior secondary schools. (One thousand and fifty six SS2 students. However only nine hundred and sixty (960) SS2 science students' responses were found usable for the study.
- c. One hundred and eight (108) unified examination administrators comprising the principals, vice principals of the sampled schools and twelve unified examinations personnel from the six Education Districts Offices (eighteen (18) unified examinations programme administrators per Education District)
- d. Forty eight (48) Heads of Science Department, forty eight (48) science teachers and the forty eight (48) SS2 science class teachers of the randomly selected senior secondary schools were also involved in the study.
- e. Fifteen unified examination programme personnel comprising all the Levels eight and above officers from the Basic Education Service (BES) unit at the Ministry of Education who were purposively sampled due to their schedule.

Therefore the total number of participants for the study was one thousand, two hundred and twenty seven (1227). The distribution is shown in the following Tables 3 - 20;

Table 3: Distribution of Participants by Number

Participants	Number
SS2 Students	960
Unified Examinations Administrators	108
H. O. D s (Science)	48
Chemistry teachers	48
Science Class teachers	48
Examination personnel (BES)	15
Total	1,227

Table 3 shows the total number of participants to be one thousand, two hundred and twenty seven. There were over-laps in some cases as twelve of the SS2 science teachers also doubled as Heads of Science Departments in smaller schools, this did not affect the number of participants for the study as the science teachers filled the Programme Assessment Questionnaire (PAQ, teachers' version) and the Teachers' Assessment Questionnaire (TAQ) in their capacities as Heads of Science Department.

Table 4: Distribution of Administrators by Gender and Education Districts

Gender	District 1	District 2	District 3	District 4	District 5	District 6	Total
Male	7(38.9%)	12 (66.7%)	7 (38.9%)	6 (33.3%)	8 (44.4%)	8 (44.4%)	48 (44.4%)
Female	11 (61.1%)	6 (33.3%)	11 (61.1%)	12(66.7%)	10(55.6%)	10 (55.6%)	60 (55.6%)
Total	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	108(100%)

Table 4 indicates that out of a total of 108 Unified Examination Administrators (UEA) sampled from the schools and Education Districts, 48 (44.4%) were males and 60 (55.6%) were females.

Table 5: Distribution of the HOD (Science) by Gender and Education Districts

Gender	District 1	District 2	District 3	District 4	District 5	District 6	Total
Male	5 (62.5%)	2 (25.0%)	4 (50.0%)	4 (50.0%)	0 (0.0%)	3 (37.5%)	18 (37.5%)
Female	3 (37.5%)	6 (75.0%)	4 (50.0 %)	4 (50.0%)	8(100.0%)	5 (62.5%)	30 (62.5%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

Table 5 informs that of the total of 48 Heads of Department of Science (HODs) sampled, 30 (62.5%) of them were female while 18 (37.5%) were males.

Table 6: Distribution of the Science Teachers by Gender and Education Districts

Gender	District 1	District 2	District 3	District 4	District 5	District 6	Total
Male	5 (62.5%)	2 (25.0%)	4 (50.0%)	5 (62.5%)	4 (50.0%)	2 (25.0%)	22 (45.8%)
Female	3 (37.5%)	6 (75.0%)	4(50.0 %)	3 (37.5%)	4 (50.0%)	6 (75.0%)	26 (54.2%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

From Table 6 it can be deduced that out of the 48 senior secondary school science teachers sampled, 26 (54.2%) of them were female and 22 (45.8%) were male.

Table 7: Distribution of the SS2 Science Class Teachers by Gender and Education Districts

Gender	District 1	District 2	District 3	District 4	District 5	District 6	Total
Male	4 (50.0%)	3 (37.5%)	4 (50.0%)	5 (62.5%)	1 (12.5%)	2 (25.0%)	19 (39.6%)
Female	4 (50.0%)	5 (62.5%)	4(50.0 %)	3 (37.5%)	7 (87.5%)	6 (75.0%)	29 (60.4%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

From Table 7 it can be deduced that out of the 48 SS2 science class teachers sampled, 19(39.6%) of them were male and 29 (60.42%) were female.

Table 8: Distribution of the Students by Gender and Education Districts

Gender	District 1	District 2	District 3	District 4	District 5	District 6	Total
Male	61 (38.1%)	65 (40.6%)	73 (45.6%)	72 (45.0%)	68 (42.5%)	48 (30.0%)	387 (40.3%)
Female	99 (61.9%)	95 (59.4%)	87 (54.4%)	88 (55.0%)	92 (57.5%)	112(70.0)	573 (59.7%)
Total	160 (100%)	160 (100%)	160 (100%)	160 (100%)	160 (100%)	160 (100%)	960 (100%)

From Table 8 it could be seen that out of the total of 960 senior secondary school two students sampled, 573 (59.7%) were females and 387 (40.3%) were males.

Table 9: Distribution of the Unified Examination Personnel at the Ministry of Education (BES unit) by Gender

Gender	Number of Officers	Percentage (%)
Males	9	60.0
Females	6	40.0
Total	15	100.0

From Table 9, it can be deduced that 9 (60.0%) out of the 15 Basic Education Officers sampled at the Ministry of Education were males, while 6 (40.0%) were females. This means that majority of the Education Officers were males.

Distribution by Professional Qualification

Table 10: Distribution of the Science Teachers based on Professional Qualification and Education Districts

Professional Qualification	District 1	District 2	District 3	District 4	District 5	District 6	Total
B.Ed.	3 (37.5%)	4(50.0%)	5 (62.5%)	7 (87.5%)	3 (37.5%)	4(50.0%)	26 (54.2%)
PGDE/M.Ed.	5 (62.5%)	4 (50.0%)	3 (37.5%)	1 (12.5%)	5 (62.5%)	4 (50.0%)	22 (45.8%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

Table 10 shows that from the 48 science teachers sampled 26 (54.2%) were graduates who had Bachelor's Degree in Education (B.Ed.), 22 (45.8%) possessed further certificates like Post

Graduate Degree in Education (PGDE) and /or Masters in Education (M.Ed.). This implies that majority of the chemistry teachers were post graduates. In each Education District 8 science teachers were sampled, this situation was the same in District 1 and 5 [5(62.5%)], except in District 2, 4 [4 (50.0%)]; District 3 [3 (37.5%)]; and District 4 [1 (12.5%)].

Table 11: Distribution of the Unified Examinations Administrators based on their Professional Qualification and Education Districts

Professional Qualification	District 1	District 2	District 3	District 4	District 5	District 6	Total
B.Ed.	8 (44.4%)	12 (66.7%)	8 (44.4%)	7 (38.9%)	9 (50.0%)	9 (50.0%)	53 (49.1%)
PGDE/M.Ed	10 (55.6%)	6 (33.3%)	10 (55.6%)	11 (61.1%)	9 (50.0%)	9 (50.0%)	55 (50.9%)
Total	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	108 (100%)

Table 11 clarifies that from the 18 educational administrators sampled, 53 (49.1%) were graduates who had Bachelor’s Degree in Education (B.Ed.), 55 (50.9%) possessed further certificates like Post Graduate Degree in Education (PGDE) and /or Masters in Education (M.Ed.). This implies that majority of these education administrators were post graduates. From each 18 education administrators sampled in each district, this situation was the same in District 1, 3 [10 (55.6%)], District 4 [11 (61.1%)] except in District 2 [6 (33.3%)]; District 5 and 6 [9 (50.0%)].

Table 12: Distribution of the HOD (Science) based on Professional Qualification and their Education Districts

Professional Qualification	District 1	District 2	District 3	District 4	District 5	District 6	Total
B.Ed.	0 (0.0%)	3 (37.5%)	6 (75.0%)	5 (62.5%)	0 (0.0%)	1 (12.5%)	15 (31.2%)
PGDE/M.Ed.	8 (100%)	5 (62.5%)	2 (25.0%)	3 (37.5%)	8 (100%)	7 (87.5%)	33 (68.8%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

Table 12 indicates that from the 48 Heads of (Science) Department- HODs sampled, 15 (31.2%) were graduates who had Bachelor’s Degree in Education (B.Ed.), 33 (68.8%) possessed further certificates like Post Graduate Degree in Education (PGDE) and /or Masters in Education (M.Ed.). This implies that majority of these HODs were post graduates. From each 8 HODs sampled in each district, this situation was the same in District 1, 5[8 (100%)], District 2 [5 (62.5%)], District 6 [7 (87.5%)] except in District 3 [2 (25.0%)] ; District 4 [3 (37.5%)].

Table 13: Distribution of the Basic Education Personnel (at the Ministry of Education) based OnProfessional Qualification

Professional Qualification	Number of Officers	Percentage (%)
B.Ed.	5	33.3
PGDE/ M.Ed.	10	66.7
Total	15	100.0

In Table 13, it is indicated that from the 15 Basic Education Officers sampled at the Ministry of Education, 5 (33.3%) were graduates who had Bachelor’s Degree in Education (B.Ed.), 10 (66.7%) possessed further certificates like Post Graduate Degree in Education (PGDE) and /or Masters in Education (M.Ed.). This implies that majority of these Basic Education Officers were post graduates.

Distribution by Years of Cognate Experience

Table 14: Distribution of the Science Teachers based on Years of Cognate Experience and their Education Districts

Year of Experience	District 1	District 2	District 3	District 4	District 5	District 6	Total
1-10 years	1 (12.5%)	3 (37.5%)	2 (25.0%)	5 (62.5%)	2 (25.0%)	2 (25.0%)	15 (31.2%)
11-20 years	3 (37.5%)	3(37.5%)	4 (50.0%)	2 (25.0%)	3 (37.5%)	4(50.0%)	19 (39.6%)
21 years above	4 (50.0%)	2 (25.0%)	2 (25.0%)	1 (12.5%)	3 (37.5%)	2 (25.0%)	14 (29.2%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

Table 14 expresses the fact that from the 48 science teachers sampled, 19 (39.6%) of them possessed 11-20 years of working experience; followed by 15 (31.2%) who had 1-10 years of working experience; then 14 (29.2%) with at least 21 years of working experience. This indicates that more of the teachers have 11-20 years of working experience. From the 8 teachers sampled in each education district, the situation was only the same in District 3 and 6 [4 (50.0%)], except in District 1, 2, 5 [3 (37.5%)] and District 4 [2(25.0%)].

Table 15: Distribution of the Unified Examination Administrators based on Years of Cognate Experience and their Education Districts

Year of Experience	District 1	District 2	District 3	District 4	District 5	District 6	Total
1-10 years	4 (22.2%)	7 (38.9%)	4 (22.2%)	3 (16.7%)	0 (0.0%)	1 (5.6%)	19 (17.6%)
11-20 years	8 (44.4%)	5(27.8%)	8 (44.4%)	5 (27.8%)	6 (33.3%)	5 (27.8%)	37 (34.3%)
21 years above	6 (33.3%)	6 (33.3%)	6 (33.3%)	10 (55.6%)	12 (66.7%)	12 (66.7%)	52 (48.1%)
Total	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	108 (100%)

A good glance at Table 15 expresses the fact that from the 108 educational administrators sampled, 52 (48.1%) of them possessed at least 21 years of working experience; followed by 37 (34.3%) who had 11-20 years of working experience; then 19 (17.6%) possessed between 1-10 years of

working experience. This indicates that majority of the educational administrators have at least 21 years of working experience. From the 18 educational administrators sampled in each education district, the situation was only the same in District 4 [10 (55.6%)], District 5 and 6 [12 (66.7%)], except in District 1, 2 and 3 [6 (33.3%)] and District 3 [3 (37.5%)] and District 4 [2 (25.0%)].

Table 16: Distribution of the HOD (Science) based on their Years of Cognate Experience and Education Districts

Cognate Experience	District 1	District 2	District 3	District 4	District 5	District 6	Total
11-20 years	8 (100%)	4 (50.0%)	0 (0.0%)	3 (37.5%)	4 (50.0%)	5 (62.5%)	24 (50.0%)
21 years above	0 (0.0%)	4 (50.0%)	8 (100%)	5 (62.5%)	4 (50.0%)	3 (37.5%)	24 (50.0%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

Table 16 expresses the fact that from the 48 Heads of Department (Science) sampled; 24 (50.0%) of them respectively possessed 11-20 years and at least 21 years of working experience. This indicates that equal proportions of the Heads of Department (Science) have 11-20 years and at least 21 years of working experience. From the eight Heads of Department (Science) sampled in each Education District, the situation was only the same in District 2 and 5 [4 (50.0%)]; however, while all the 8(100.0%) teachers had 11-20 years of working experience in District 1, reverse was the situation in District 3 where all the 8 (100.0%) teachers had at least 21 years of working experience. For District 4, 3(37.5%) teachers had 11-20 years of working experience, while 5 (62.5%) teachers had at least 21 years of working experience. The reverse was the situation in District 6 where there were 5 (62.5%) teachers with 11-20 years of working experience and 3(37.5%) teachers with at least 21 years of working experience.

Table 17: Distribution of the Basic Education Services Personnel (at the Ministry of Education) based on Years of Cognate Experience

Years of Cognate Experience	Number of Officers	Percentage (%)
1-10 years	2	13.3
11-20 years	4	26.7
21 years above	9	60.0
Total	15	100.0

Table 17 reveals that from the 15 Basic Education Officers sampled at the Ministry of Education, 9 (60.0%) possessed at least 21 years of working experience, 4 (26.7%) had 11 to 20 years of working experience, only 2 (13.3%) of them possessed 1 to 10 years of working experience. This suggests that majority of these Basic Education Officers had been in the education sector for at least 21 years.

Distribution by Years of Supervision of Unified Examinations

Table 18: Distribution of the Science Teachers Based On their Years of Supervision of Unified Examinations and Education Districts

Year of Supervision	District 1	District 2	District 3	District 4	District 5	District 6	Total
1-5 years	1 (12.5%)	0 (0.0%)	1 (12.5%)	5 (62.5%)	1 (12.5%)	0 (0.0%)	8 (16.7%)
6-10 years	0 (0.0%)	5 (62.5%)	3 (37.5%)	0 (0.0%)	1 (12.5%)	5 (62.5%)	14 (29.2%)
10 years above	7 (87.5%)	3 (37.5%)	4 (50.0%)	3 (37.5%)	6 (75.0%)	3 (37.5%)	26 (54.2%)
Total	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	8 (100%)	48 (100%)

Numerical values in Table 18 express the fact that from the 48 chemistry teachers sampled, 26 (54.2%) of them possessed at least 10 years of supervising work experience; followed by 14 (29.2%) who had 6-10 years of supervising work experience; then 8 (16.7%) possessed between 1-5 years of supervising work experience. This indicates that majority of the science teachers have at

least 10 years of supervising work experience. From the 8 science teachers sampled in each Education District, the situation was only the same in District 1 [7 (87.5%)], District 3 [4 (50.0%)], and District 5 [6 (75.0%)], except in District 2, 4, and 6[3 (37.5%)].

Table 19: Distribution of the Examination Administrators based on their Years of Supervision of Unified Examinations and Education Districts

Year of Supervision	District 1	District 2	District 3	District 4	District 5	District 6	Total
1-5 years	1 (5.6%)	6 (33.3%)	4 (22.2%)	2 (11.1%)	0 (0.0%)	0 (0.0%)	13 (12.0%)
6-10 years	6 (33.3%)	2(11.1%)	8 (44.4%)	3 (16.7%)	2 (11.1%)	8 (44.4%)	29 (26.9%)
10years above	11(61.1%)	10 (55.6%)	6 (33.3%)	13 (72.2%)	16 (88.9%)	10 (55.6%)	66 (61.1%)
Total	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	18 (100%)	108 (100%)

From Table 19 the 108 educational administrators comprised of 66 (61.1%) people who possessed at least 10 years of supervising work experience; followed by 29 (26.9%) who had 6-10 years of supervising work experience; then 13 (12.0%) possessed between 1-5 years of supervising work experience. This indicates that majority of the educational administrators have at least 10 years of supervising work experience. From the 18 chemistry teachers sampled in each education district, the situation was only the same in District 1 [11 (61.1%)], District 2 and 6 [10 (55.6%)], District 4 [13 (72.2%)], and District 5 [16 (88.9%)], except in District 3[6 (33.3%)].

Table 20: Distribution of the Unified examinations Programme personnel (at the Ministry of Education) based on Years of Supervision of the Unified Examinations

Years of Supervision	Number of Officers	Percentage (%)
1-5 years	2	13.3
6-10 years	4	26.7
10 years above	9	60.0
Total	15	100.0

In Table 20, it was indicated that from the 15 Basic Education Officers sampled at the Ministry of Education, 9 (60.0%) possessed at least 10 years of supervising work experience, 4 (26.7%) had 6 to 10 years of supervising work experience, only 2 (13.3%) of them possessed 1 to 5 years of supervising work experience. This suggests that majority of these Basic Education Officers had been in the supervising work experience for at least 10 years.

3.5 Research Instruments

Six research instruments were used to collect data for this study:

Programme Assessment Questionnaire (PAQ)

The Programme Assessment Questionnaire was adapted from the World Bank (2011) “System Assessment and Benchmarking for Education Results Questionnaire”. This Questionnaire was used by the World Bank (2011) to determine the quality and funding of classroom and school based assessment, this was modified to suit unified examinations programmes. There were two versions of this instrument; one version was for the Unified Examinations personnel at the Basic Education Services (BES) Department of the Lagos State Ministry of Education and the second version was for the science and SS2 science class teachers in the selected public secondary schools. The BES version was a forty- item- instrument. It had six sections: section one was used to elicit information

on the bio data of the respondents and it consisted of six items. Section two was made up of ten items and was used to elicit information on the standard of the unified examination questions such as “There are subject specialists that moderate the unified examinations questions”. Section three consisted of six items on the funding of the unified examinations. Section four comprised of seven items on the performances of the personnel responsible for the unified examinations. Section five had five items on the specific functions of the teachers with respect to examinations related tasks that are performed by the teachers among others. and section six comprised of six items focusing on the statutory backing of the unified examinations and conformity of the unified examinations with standard procedures guiding test item construction. It was scored on a two point Likert like scale of “Yes”=2 or “No”=1. Below are samples of PAQ (BES version) statements;

S/N	Items	Yes	No
1	The item writers are usually measurement and evaluation professionals.		
2	There is a policy document that authorizes the unified examinations.		

The teachers’ version of the Programme Assessment Questionnaire (PAQ) adapted by the researcher had thirty five-items and consisted of six sections: Section one had five items on the teachers’ demographic data while section two consisted of seven items on the use of uniform scoring criteria. Section three has seven items based on the use of uniform promotion criteria. Section four contained ten items on the attitude of teachers to the Unified Examinations, Section five was on the school attendance patterns of the students and it consisted of six items as documented in the students’ attendance register. The PAQ (Chemistry/ SS2 Class Teachers’ Version) was scored on a four point modified Likert scale of “All the time”=4, “Most of the time”=3, “On few occasions”=2 and “Never”=1

Teachers' Version of PAQ; below are sample statements in the PAQ (Teachers' version)

S/N	Items	All the time	Most of the time	On few occasion	Never
1	The unified examinations administrators ensure that the subjects answer scripts are exchanged between schools for marking.				
2	Failure by the school management to adhere strictly to the laid down promotion criteria attracts penalty from the relevant authority.				

Students' attitude to the Unified Examinations Scale (SAUES)

This instrument was developed by the researcher to obtain data on the students' attitude to the unified examinations. This instrument was made up of ten items divided into two sections; section one were four items on their bio-data and section two had six items on the attitude of the students to the unified examinations. The SAUES was scored on a four point modified Likert scale of "Strongly Agree = 4", "Agree = 3", "Disagree = 2" and "Strongly Disagree" = 1

Below are samples of SAUES:

S/N	Items	SA	A	D	SD
1	The unified examination is compelling me to attend school on a regular basis.				
2	The unified examinations make the teachers very thorough in teaching the subjects.				

Administration and Supervision of Unified Examinations Questionnaire (ASUEQ)

This instrument was developed by the researcher to collect relevant data from the Unified Examinations Programme Administrators at the Education Districts, the school Principals and Vice principals (academics). It consisted of twenty items divided into three sections: section one had six items and was used to gather information on the bio data of the respondents while sections two and three consisted of seven items each on the mode of administration and supervision of the Unified

Examinations. It was scored on a four point modified Likert scale of “All the time” = 4, “Most of the time” = 3, “On a few occasions” = 2 and “Never” = 1.

Below are samples of items in the ASUEQ:

S/N	Items	All the time	Most of the time	On few occasions	Never
1	The Unified Examination questions are usually promptly distributed to the schools.				
2	There are usually adequate personnel to supervise the conduct of the examinations.				

Teachers' Assessment Questionnaire (TAQ)

The instrument was developed by the researcher to elicit information from the Heads of Science Departments on the science teachers' attendance pattern and the frequency at which they completed the Chemistry's scheme of work. It was a fifteen- item instrument, divided into three sections; section one was for their bio data, section two consisted of six items on the teachers' school attendance patterns while section three had five items on the teachers' frequency of completion of the chemistry's scheme of work. It was scored on a four point modified Likert scale of “Very Regular” = 4, “Regular” = 3, “Irregular” = 2, and “Very Irregular” = 1 and “All the time” = 4, “Most of the time” = 3, “On a few occasion” = 2 and “Never” = 1

Below are samples of items in the TAQ;

S/N	Items	Very Regular	Regular	Irregular	Very Irregular
1	Attendance at school				
2	Attendance at classes				
	Frequency of Completion of Chemistry Scheme	All the time	Most of the time	On few occasions	Never
3	The lesson for the week is being taught.				
4	Lesson is based on lesson note.				

Chemistry Achievement Test (CAT) and Unified Examinations Chemistry Questions (UEQ)

This instrument was a sixty - item multiple choice test items developed by the researcher. The questions were drawn from the following topics: Families of elements, Oxidation and Reduction, Electrolysis, Types of Chemical Reactions, Acids and Bases. These topics were chosen because they are part of first and second term topics in the Lagos State Ministry of Education's Unified Scheme of work for SS2 students in Chemistry. The students' scores on this test were compared to a similar one that was compiled by the researcher from past Unified Examinations Chemistry Questions (UEQ) in the same topics. The content validity of these instruments was determined by giving draft copies to six measurement and evaluation experts for scrutiny. The CAT and UEQ had reliability coefficients of 0.76 and 0.72 respectively in order to establish their stability over a period of two weeks. The Chemistry Achievement test was constructed using a test blue print as shown in the Table 21 below as guide;

Table 21: Test blue print for Chemistry Achievement Test and Unified Examinations Questions

Content	Weight%	Knowledge 40%	Comprehension 35%	Application 25%	Total
Families of Element	25	6	5	4	15
Oxidation and Reduction	15	4	3	2	9
Electrolysis	20	5	4	3	12
Types of Reactions	25	6	5	4	15
Acids and Bases	15	4	3	2	9
Total	100	25	20	15	60

Below are samples of items in CAT;

1. Elements in the same group of the periodic table have

- A. Similar electronic configuration B. Similar orbital configuration C. The same number of valence electrons D. The same number of electrons.
2. What is the oxidation number of chromium in sodium heptaoxochromate (vi)?
A. +3 B. +4 C. zero D. +2
3. Flow of current in electrolytes is due to
A. Electrons B. holes and electrons C. Ions D. Charges

3.6 Validation of the Instruments

To establish the content and face validity of the research instruments, the instruments were given to four experts in the field of Measurement and Evaluation to review the items. They checked for unclear, ambiguous and biased items. The instruments were submitted to the researcher's supervisors for final scrutiny to establish the face and content validity of the instruments for the study.

3.7 Pilot Study

A pilot study was carried out by the researcher before the main study to have a try-out of the instruments and to determine the reliability coefficients of the research instruments in order to establish their psychometric properties. The instruments were administered on a total of one hundred and thirty three participants: ninety SS2 students from three senior secondary schools randomly selected from one of the Education Zones that was not involved in the main study, Seven examination officers from the Basic Education Services Department of the Ministry of Education, two examination officers from each of the six Education Districts, three Principals, six Vice Principals and Heads of the Department of science and technology and nine science teachers who were randomly selected for the pilot study.

Table22: Cronbach’sAlpha Reliability Coefficients of the Instruments

Instrument	N	No. of items	Reliability
PAQ (BES)	7	40	0.72
PAQ (TEACHERS)	9	35	0.74
SAUEQ			0.67
ASUEQ	90	10	0.83
	21	20	
TAQ	6	15	0.84
CAT	90	60	0.76
UEQ	90	60	0.72

KEY

PAQ (BES VERSION) = Programme Assessment Questionnaire (Basic Education Service Unit)

PAQ (TEACHERS’ VERSION)= Programme Assessment Questionnaire (Teachers Version)

SAUES = Students’ Attitude to the Unified Examinations Scale

ASUEQ = Administration and Supervision of the Unified Examinations Questionnaire

TAQ = Teachers’ Assessment Questionnaire

CAT = Chemistry Achievement Test

UEQ = Unified Examination Questions

Evidences from Table 22 above reveal that the reliability coefficients of the Programme Assessment Questionnaire (BES and Chemistry Teachers’ versions) to be 0.72 and 0.74 respectively, Students’ Attitude to the Unified Examinations Scale to be 0.67, Administration and Supervision of the Unified Examinations Questionnaire gave 0.83, Teachers Assessment Questionnaire was 0.84, CAT to be 0.76 and UEQ gave 0.72.

3.8 Procedure for Data Collection

An introductory letter was obtained from the Department of Educational Foundations to seek permission from the Ministry of Education at Alausa for permission to carry out the study in the

selected schools. Six letters of permission from the Ministry of Education were subsequently received and taken to the Tutor General/ Permanent Secretary of each of the six Education Districts for permission to carry out the study in the selected schools in their respective Education Districts. The letters of permission from each Tutor General were taken to the principals of the randomly selected secondary schools in each Education District to carry out the study in their schools. The principals granted the researcher permission to carry out the study in the sampled schools.

3.9 Recruitment and Training of Research Assistants

Six research assistants were appointed to assist in data collection for the study. The research assistants were graduates of Education in Science subjects with a minimum of five years teaching experience. They were trained for one and a half hours for two days, on the roles expected of them in the administration of the instruments. They were adequately compensated at the end of the field work.

3.10 Administration of Instruments

The administration of the instruments lasted for a period of thirteen weeks. The researcher assisted by the research assistants administered the instruments on all the samples: The first twelve weeks were spent in administering the instruments among the sampled students and staff in the public senior secondary schools. The instruments were administered between Mondays and Thursdays in these schools at an average of three and half hours per day, therefore the instruments were administered to one school per day for twelve weeks. The last week was devoted to administering the instruments to the Unified Examinations administrators at the Basic Education Services unit of the Ministry of Education and the six Education Districts.

3.11 Method of Data Analysis

The data generated from the various instruments were analysed statistically using both descriptive and inferential statistics appropriate for each hypothesis. Hypotheses 1, 2, 3,4 and 5 were analysed using One - Way Analysis of Variance (ANOVA) statistics and Hypotheses 6 and 7 were analysed using Paired Samples t-Test and Pearson Product Moment Correlation Coefficient respectively. All the hypotheses were tested at 0.05 level of significance.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 Analysis of Data

In the main study, uniform scoring criteria was found to be used in the six Education Districts; however the promotion criteria used for the promotion of students' differed from one Education District to the other. There was uniformity in the mode of administration and supervision of the unified examinations, completion of the subject schemes of work; as in the teachers' attitude and attendance patterns in the public schools in Lagos State. However there were variations in the students' attitude and school attendance patterns. The procedure for constructing the unified examinations was found to differ significantly from the standard process guiding test item construction. While the students' performances in unified examinations chemistry questions could not significantly predict their performances in a chemistry achievement test.

4.2 Testing of Hypotheses

Hypothesis 1a: There is no significant difference in the scoring criteria used in the public secondary schools in the six Education Districts in Lagos state.

One – Way Analysis of Variance statistics was used to test this hypothesis and result is presented in Tables 23 - 24 below;

Table 23: Descriptive Data on the Use of Uniform Scoring Criteria across the six Education Districts in Lagos State

		District 1 (N=8)	District 2 (N=8)	District 3 (N=8)	District 4 (N=8)	District 5 (N=8)	District 6 (N=8)	(N=48)
Statements	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Ave. Mean /Std. Dev.
1 Utilization of uniform scoring	3.25 0.46	3.38 0.52	3.38 0.52	3.50 0.53	3.13 0.35	3.50 0.53		3.36 0.49
2 Exchange of Subject answer script	3.25 0.46	3.50 0.53	3.50 0.53	3.63 0.52	3.13 0.35	3.38 0.52		3.40 0.49
3 Conference Marking	3.00 0.00	3.25 0.46	3.13 0.64	3.63 0.52	3.50 0.53	3.25 0.89		3.29 0.51
4 Adequate Marking Guide	1.63 0.74	2.75 1.16	3.13 1.25	2.13 1.13	2.13 0.99	2.88 1.25		2.44 1.09
5 Penalization of Erring Schools	1.86 0.35	2.50 0.53	2.13 0.83	2.88 1.25	2.50 0.53	2.75 0.71		2.44 0.70
6 Monitoring Team on Conference marking	2.75 0.46	3.13 0.64	3.50 0.53	3.63 0.52	2.88 0.35	3.50 0.53		3.23 0.51
7 Availability of Marking Guide	4.00 0.00	3.75 0.46	3.75 0.71	3.50 0.76	3.63 0.52	3.75 0.46		3.73 0.49
Ave. Mean	2.82	3.18	3.22	3.27	2.99	3.29		3.13
Std. Dev.	0.35	0.61	0.72	0.75	0.52	0.70		0.61
Total Mean	19.74	22.26	22.50	22.87	20.87	23.00		21.88
Std. Dev.	1.58	3.58	2.45	4.02	1.96	3.30		3.03

Evidences from Table 23 shows that availability of marking guide had the highest mean response of (3.73>2.50), followed by exchange of subject answer scripts (3.40>2.50), utilisation of uniform scoring criteria (3.36>2.50), engagement in conference marking of examination scripts (3.29>2.50), monitoring team on conference marking (3.23>2.50), adequacy of marking guide (2.44>2.50), and penalization of erring schools (2.44>2.50).Table 23 equally shows that uniform scoring criteria was mostly used in District 6 with a mean response of 3.29 >2.50; this was followed by District 4 (3.27 >2.50); District 3 (3.22 > 2.50); District 2 (3.18>2.50); District 5 (2.99>2.50) and District 1 (2.82>2.50). The table also shows that District 6 emerged with the highest total mean response (23.00) in the use of uniform scoring criteria this was followed by District 4 (22.87), District 3 (22.50), District 2 (22.25), District 5 (20.87), and District 1 (19.74).

Comparing the average (mean) response (23.00) in District 6 with the responses from other Districts, meagre differences in the responses were noticed. The overall mean response in District 6 differs from that of District 4 by 0.13, differs from District 3 by 0.50, and differs from District 2 by 0.75, except for District 5 and 1 where the differences are 2.13 and 3.26 respectively.

One-way ANOVA statistics was used to determine if significant difference existed in the scoring criteria used across the six Education Districts in Lagos State, the result is shown in Table 24 below;

Table 24: One-way ANOVA of the use of Uniform Scoring Criteria in the Public Secondary Schools in the Six Education Districts in Lagos State

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-crit.	Remark
Between Districts	66.500	5	13.30				
Within Districts	364.750	42	8.685	1.531	0.201	2.44	H₀ is not rejected
Total	431.250	47					

Significant level 0.05; df = 5, 42; critical value = 2.44; F- calculated < F- critical

Table 24 above reveals that the F-calculated value of 1.531 is less than F-critical of 2.44 given 5 and 42 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis is not rejected. It implies that no significant difference existed in the scoring criteria used in the public secondary schools across the six Education Districts in Lagos State.

Hypothesis 1b: There is no significant difference in the promotion criteria used in the public secondary schools in the six Education Districts in Lagos state.

One – Way ANOVA statistics was used to test this hypothesis and result is presented in Tables 25 - 27 below;

Table 25: Descriptive Data of the use of Uniform Promotion Criteria in the Public Secondary Schools across the Six Education Districts in Lagos State

Statements	District 1	District 2	District 3	District 4	District 5	District 6	Ave. Mean /Std. Dev.
	(N=8)	(N=8)	(N=8)	(N=8)	(N=8)	(N=8)	
1 Strict Adherence to Uniform promotion	1.50 0.53	3.13 1.25	2.25 1.04	2.13 1.25	1.50 0.53	3.13 0.99	2.27 0.93
2 Use of Discretion to Promote	2.00 0.00	2.50 0.93	2.63 0.92	2.63 1.19	2.00 0.00	2.38 0.74	2.36 0.63
3 Automatic Promotion Given	3.50 0.53	3.63 0.52	3.63 0.52	3.50 1.07	3.25 0.46	3.25 0.71	3.46 0.64
4 Consideration of Continuous Assessment Scores	3.75 0.46	3.38 1.06	3.63 0.74	3.63 1.06	3.63 0.52	3.63 0.74	3.61 0.76
5 Regular Attendance As Basis of Promotion	2.25 0.46	2.75 1.04	2.88 1.25	3.13 0.99	2.25 0.46	3.13 0.99	2.73 0.87
6 Penalty for failing to adhere	2.00 0.00	2.88 0.99	2.50 0.93	2.88 1.13	2.13 0.35	3.13 0.83	2.59 0.71
7 Students' Class Repetition with less than 50% obtained scores	3.00 0.00	3.50 0.53	3.25 0.71	3.50 0.53	3.00 0.00	3.00 1.07	3.21 0.47
Ave. Mean /Std. Dev.	2.57 0.28	3.11 0.90	2.97 0.87	3.06 1.03	2.54 0.33	3.09 0.87	2.89 0.71
Total Mean /Std. Dev.	18.00 0.53	21.75 3.99	20.75 3.28	21.38 4.57	17.75 1.04	21.63 3.34	20.21 3.44

Evidence from Table 25 shows that consideration of continuous assessment scores before promotion had the highest mean response of 3.61>2.50, followed by the art of giving automatic promotion to students (3.46>2.50), students' class repetition if they score less than 50% of the overall obtainable score (3.21>2.50), regular attendance as a basis of promotion (2.73>2.50), penalty for failing to adhere to the use of promotion criteria (2.59>2.50), use of discretion to promote students (2.36<2.50), and strict adherence to the use of uniform promotion criteria (2.27<2.50). The table also reveals that uniform promotion criteria was mostly used in District 2

with a mean response of 3.11>2.50; followed by District 6 (3.09>2.50), District 4 (3.06>2.50), District 3 (2.97>2.50), District 1 (2.57>2.50), and District 5 (2.54>2.50). Thus District 2 emerged with the highest total mean response (21.75) in the use of uniform promotion criteria, this was followed by District 6 (21.63), District 4 (21.38), District 3 (20.73), District 1 (18.00), and District 5 (17.75). Comparing the average (mean) response (21.75) in District 2 with the responses from other Districts, some differences in the responses were noticed. The overall average response in District 2 differs from that of District 6 by 0.32, differs from District 4 by 0.37 differs from District 3 by 1.00, except for District 1 and 5 where the differences are 3.75 and 4.00 respectively.

One way –ANOVA statistics was used to determine if significant difference exist in the promotion criteria used across the six Education Districts in Lagos State and the result is presented below:

Table 26: One-way ANOVA statistics of the use of Uniform Promotion Criteria in the Public Secondary Schools across the Six Education Districts in Lagos State

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-crit.	Remark
Between Groups	135.667	5	27.133				
Within Groups	420.250	42	10.006	2.712	0.033	2.44	H₀ is Rejected
Total	555.917	47					

Significant level= 0.05; df = 5, 42; critical value = 2.44; F-calculated > F- critical

Table 26 above reveals that the F-calculated value of 2.71 is greater than F-critical value of 2.44 given 5 and 42 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis is rejected. This implies that significant difference exists in the promotion criteria used in the public secondary schools across the six Education Districts in Lagos State.

LSD Multiple Comparison Post Hoc Test analysis was utilized to determine the trend of the difference; the result is presented in the Table 27:

Table 27: LSD Multiple Comparison Post Hoc Test of Difference in the Use of Uniform Promotion Criteria across the six Education Districts in Lagos State

(I) Education Districts	(J) Education Districts	Mean Difference(I-J)	Sig. (p) value
District 1	District 2	-3.75	0.02
	District 4	-3.38	0.04
	District 6	-3.63	0.03
District 2	District 5	4.00	0.02
	District 4	3.63	0.03
District 5	District 6	-3.88	0.02

Evidences from the table of multiple comparisons above shows that the use of uniform promotion criteria in District 1 was in comparison less than its usage in every other District (District 2: mean difference= -3.75, $p = 0.02 < 0.05$; District 3: mean difference= -2.75, $p = 0.09 > 0.05$; District 4: mean difference= -3.38, $p = 0.04 < 0.05$; District 6: mean difference= -3.63, $p = 0.03 < 0.05$), except District 5 (mean difference = 0.25, $p = 0.88 > 0.05$); The observed differences between District 1 and Districts 2, 4, and 6; District 2 and 5 were observed to be statistically significant. Significant difference was observed in the use of uniform promotion criteria between District 4 and 5 (mean difference= 3.63, $p = 0.03 < 0.05$). Lastly, the use of uniform promotion criteria in District 5 was less than such usage in District 6 (mean difference= -3.88, $p = 0.02 < 0.05$). Hence, it could be inferred that the source of statistical significance in the use of uniform promotion criteria could

be traced to exist between Districts 1 and 2, Districts 1 and 4, Districts 1 and 6, Districts 2 and 5, Districts 4 and 5, as well as with District 5 and 6.

Hypothesis 2a: There is no significant difference in the modes of administration of the unified examination papers in the public secondary schools across the six Education Districts in Lagos state.

One – Way Analysis of Variance (ANOVA) statistics was used to test the hypothesis and the result is presented in the Tables 28 and 29;

Table 28: Descriptive Data of the Mode of Administration of the Unified Examination Question Papers in the Public Secondary Schools across the Six Education Districts in Lagos State

		District 1 (N=18)	District 2 (N=18)	District 3 (N=18)	District 4 (N=18)	District 5 (N=18)	District 6 (N=18)	(N=48)
Statements		Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Ave. Mean /Std. Dev.
1	Prompt distribution of questions	3.17 0.62	3.17 0.51	3.17 0.62	3.33 0.59	3.61 0.50	3.00 0.69	3.24 0.59
2	Late arrival of materials	2.28 0.57	2.33 0.69	2.39 0.78	2.78 0.73	2.94 0.24	2.83 0.62	2.59 0.61
3	Tamper proof examination questions	3.83 0.38	3.89 0.32	3.78 0.43	3.56 0.51	3.39 0.50	3.39 0.78	3.60 0.50
4	Coordination by personnel from the Ministry	3.67 0.49	3.72 0.46	3.61 0.50	3.22 0.43	3.50 0.51	3.39 0.78	3.45 0.52
5	Dedication of Zonal personnel	3.67 0.49	3.67 0.49	3.33 0.59	3.00 0.97	2.50 0.62	3.11 0.83	3.16 0.73
6	Late starting of examination	2.28 0.67	2.06 0.80	2.33 0.91	2.61 0.78	2.67 0.49	3.06 0.73	2.55 0.71
7	Simultaneous examination at all centres	2.61 0.85	2.83 0.79	2.78 0.81	2.89 0.90	2.83 0.71	2.72 0.83	2.80 0.83
Ave. Mean/ Std. Dev.		3.07 0.58	3.10 0.58	2.98 0.71	3.06 0.70	3.06 0.51	3.07 0.75	3.06 0.64
Total Mean/ Std. Dev.		21.50 2.20	21.67 2.22	21.39 2.57	21.39 2.83	21.44 1.72	21.50 4.03	21.48 2.64

Table 28 above shows that tamper proofing of examination questions received the highest mean response of 3.60>2.50; the coordination of District personnel from the Ministry of Education for adequate monitoring of the examination question had a mean response of 3.45>2.50, prompt distribution of examination questions to schools had an average response of 3.24>2.50, dedication of zonal personnel for monitoring of examination had an average response of 3.16>2.50, simultaneous conduct of unified examination at all schools had an average response of 2.80>2.50, taking of late arrival of examination material seriously attracted mean response of 2.59>2.50, while address and correction of issues on late starting of examinations received an average response of 2.55>2.50. The table equally reveals that District 2 had the highest mean response (3.10>2.50) in the mode of administration of the Unified Examinations papers, this was followed by District 1 (3.07>2.50) alongside District 6 (3.07>2.50), then by Districts 4 and 5 (3.06>2.50) and District 3 (2.98). Thus District 2 emerged with the highest mean response (21.67) in the modes of administering Unified Examination papers, this was followed by District 1 and 6 (21.50), District 5 (21.44), District 5 (21.44), District 3 and 4 (21.39). Comparing the average (mean) response (21.67) in District 2 with the responses from other Districts, meagre differences in the responses were noticed. The overall response in District 2 differs from that of District 1 and 6 by 0.67, differs from District 5 by 0.23, and differs from District 2 and 4 by 0.28.

One – Way ANOVA statistics was used to determine whether significant difference existed in the mode of administration of the Unified Examinations across the six Education Districts and result is presented in the Table 29:

Table 29: One-way Analysis of Variance of the Mode of Administration of the Unified Examination Question Papers in the Public Secondary Schools across the Six Education Districts in Lagos State

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. p value	F critical.	Remark
Between Districts	18.083	5	3.617				
Within Districts	684.833	102	6.714	0.539	0.747	2.29	H₀ is not rejected.
Total	702.917	107					

Significant level=0.05,df = 5, 102 critical value=2.29; F-calculated < F- critical

Result from Table 29 above, reveals that the F-calculated of 0.539 is less than F-critical of 2.29 given 5 and 102 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis is not rejected, meaning that no significant difference exists in the mode of administration of Unified Examination papers in the public Secondary Schools across the six Education Districts in Lagos State.

Hypothesis 2b: There is no significant difference in the mode of supervision of the unified examination papers in the public secondary schools across the six Education Districts in Lagos State.

One – Way Analysis of Variance statistics was used to test this hypothesis and the result is presented in Tables 30 and 31;

Table 30: Descriptive Data of the Mode of Supervision of the Unified Examination Question Papers across the Six Education Districts in Lagos State

		District 1 (N=48)	District 2 (N=48)	District 3 (N=48)	District 4 (N=48)	District 5 (N=48)	District 6 (N=48)	Ave. Mean (N=108) /Std. Dev.
Statements		Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	
1	Adequate Supervision	3.22 0.55	3.28 0.46	3.44 0.62	3.56 0.51	3.33 0.49	3.17 0.51	3.33 0.52
2	Coordination by district personnel	3.72 0.46	3.72 0.46	3.83 0.38	3.50 0.51	3.28 0.46	3.44 0.62	3.58 0.48
3	Attention given to report on examination conduct	2.72 0.75	2.61 0.92	2.94 0.87	3.06 0.73	2.83 0.62	2.94 0.54	2.85 0.74
4	Supervisors' misconduct	2.56 0.70	2.72 0.67	2.61 0.78	3.06 0.73	2.78 0.55	3.17 0.71	2.82 0.69
5	Dealing with reported cases of examination malpractices	2.72 0.75	2.67 0.59	2.89 0.68	3.06 0.64	2.67 0.59	3.22 0.73	2.87 0.66
6	Tamper proof examination papers	3.00 0.69	3.17 0.71	3.11 0.83	3.11 0.47	2.94 0.42	3.44 0.51	3.13 0.61
7	Punishment of students in exam malpractices	3.00 0.49	3.22 0.55	2.94 0.54	3.33 0.49	2.78 0.43	3.39 0.61	3.11 0.52
	Ave. Mean /Std. Dev.	2.99 0.63	3.06 0.62	3.11 0.67	3.24 0.58	2.94 0.51	3.25 0.60	3.10 0.60
	Total Mean /Std. Dev.	20.94 2.26	21.39 2.68	21.78 2.67	22.67 2.57	20.61 2.12	22.78 2.96	21.69 2.63

Table 30 reveals that coordination by the District personnel received the highest mean response of 3.58>2.50; adequate supervision of the examinations received a mean response of 3.33>2.50, tamper proofing of examination papers received an average response of 3.13>2.50, punishment of students who engaged in examination malpractices attracted an average response of 3.11>2.50, dealing with reported cases of examination malpractices had an average response of 2.87>2.50, attention given to report on examination conduct attracted mean response of 2.85>2.50, while investigation of supervisors' misconduct received an average response of 2.55>2.50. The table also shows that District 6 emerged with the highest mean response (3.25>2.50) in the modes of supervising the Unified Examination papers; this was followed by District 4 (3.24>2.50), District 3

(3.11>2.50), District 2 (3.06>2.50), District 1 (2.99>2.50) and District 5 (2.94>2.50). Thus District 6 emerged with the highest mean response (22.78) in the modes of supervising unified examination papers, this was followed by district 4 (22.67), District 3 (21.78), District 2 (21.39), District 1 (20.94) and District 5 (20.61). Comparing the average (mean) response (22.78) in District 6 with the responses from other Districts, meagre differences in the responses were noticed. The overall response in District 6 differs meagrely from that of District 4 by 0.11, differs from District 3 by 1.00, differs from District 2 by 1.39, differs from District 1 by 1.84, and differs from District 5 by 1.17.

To determine if these differences are significant, One – Way Analysis of Variance was used and the result is presented in Table 31;

Table 31: One-way Analysis of Variance of the Mode of Supervision of the Unified Examination Question Papers in the Public Secondary Schools across the Six Education Districts in Lagos State

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-crit.	Remark
Between Districts	71.194	5	14.239	2.175	0.063	2.29	H₀ is not rejected
Within Districts	667.722	102	6.546				
Total	738.917	107					

Significant level = 0.05, df = 5, 102, critical value = 2.29; F- Calculated < F- critical

Evidence from Table 31 reveals that the F-calculated of 2.18 is less than F-critical of 2.29 given 2 and 102 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis was not rejected. This implies that no significant difference exist in the mode of supervision of Unified Examination papers in the public secondary schools across the six Education Districts in Lagos State.

Hypothesis 3: There is no significant difference in the rate of completion of the subject schemes by the teachers in the public secondary schools across the six Education Districts in Lagos state. One-way ANOVA statistics was used to test the hypothesis as shown in the Tables 32 and 33:

Table 32: Descriptive Data of the Rate of Completion of Science Scheme of Work across the Six Education Districts in Lagos State

		District 1	District 2	District 3	District 4	District 5	District 6	
Statements	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Average Mean/ Std. Dev.
1 Its Agreement with the Unified Work Scheme	4.00 0.00	3.50 0.53	3.63 0.52	3.86 0.35	3.88 0.35	3.38 0.52	3.71 0.38	
2 Lesson note & The Diary	3.75 0.46	3.88 0.35	3.88 0.35	3.75 0.46	3.75 0.46	3.88 0.35	3.82 0.41	
3 Lesson Note topics & Students Notebook	3.88 0.35	3.88 0.35	3.88 0.53	3.75 0.46	3.75 0.46	3.63 0.74	3.80 0.48	
4 Lesson for the week is being taught	4.00 0.00	3.88 0.35	4.00 0.00	3.88 0.35	4.00 0.00	3.75 0.46	3.92 0.19	
5 Lesson is based on lesson notes	2.50 1.07	2.50 0.76	2.63 1.19	2.88 0.35	2.00 0.93	2.63 0.52	2.52 0.80	
Grand Mean & Std Dev.	3.63 0.38	3.53 0.47	3.60 0.52	3.62 0.39	3.48 0.44	3.45 0.52	3.55 0.45	
Total Mean & Std Dev.	18.13 1.64	17.63 1.06	18.00 1.85	18.13 1.36	17.38 1.41	17.25 1.58	17.75 1.47	

Evidence from Table 32 reveals that the mean response for teaching weekly lessons was the highest with a value of (3.92>2.50); followed by (3.82>2.50) as mean response for the agreement of lesson notes with the Unified Scheme of Work in the Diary; (3.80>2.50) as a mean response for the agreement of topics in the lesson notes with topics taught in the students' notebook; (3.71>2.50) as mean response for the agreement of subject scheme of work with the Lagos state Unified scheme of work; and (2.52>2.50) for the fact that lesson taught is based on lesson note. The table also shows that District 1 had the highest mean response of (3.63>2.50) in the rate of completion of Chemistry Scheme of Work, followed by District 4 (3.62>2.50); District 3

(3.60>2.50), District 2 (3.53>2.50); District 5 (3.48>2.50); and District 6 (2.45<2.50). Thus District 1 and 4 emerged with the highest mean response (18.13) in the rate of completion of the subject schemes and syllabi, this was followed by District 3 (18.00), District 2 (17.63), District 5 (17.38), and District 6 (17.25). Comparing the average (mean) response (18.13) in District 1 and 4 with the responses from other Districts, meagre differences in the responses was noticed. The overall response in District 1 and 4 differs meagrely from that of District 3 by 0.13, differs from District 2 by 0.50, and differs from District 5 by 0.75, differs from District 6 by 0.88.

One – way ANOVA statistic was used to determine if significant difference existed in the rate of completion of the subject scheme in chemistry as shown in the Table33;

Table 33: One-way Analysis of Variance (ANOVA) for Difference in the rate of Completion of the Science Scheme of Work by the Teachers across the six Education Districts

Source of variation	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-tab.	Remark
Between Districts	6.00	5	1.200				
Within Districts	95.00	42	2.262	0.531	0.752	2.44	H₀ is not rejected
Total	742.963	47					

Significant = 0.05, df = 5 and 47, critical value = 2.44 F- Calculated < F- critical

Table 33 reveals that the F-calculated value of 0.531 obtained is less than F-critical value of 2.44 given 5 and 42 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis is not rejected. This implies that there is no significant difference in the rate of completion of the chemistry schemes of work by the teachers in the public secondary schools in the six Education Districts in Lagos state.

Hypothesis 4a: There is no significant difference in teachers’ attitude to the unified examinations programme in the public secondary schools across the six Education Districts in Lagos state.

One – Way ANOVA statistics was used to test the hypothesis, the result is presented in Tables 34 and 35:

Table 34: Descriptive Data of Teachers’ Attitude to the Unified Examination Programme across the Six Education Districts in Lagos State

		District 1	District 2	District 3	District 4	District 5	District 6	
Statements		Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Ave. Mean /Std.Dev.
1	Indifference to students’ outcomes	1.87 1.13	1.63 0.74	2.38 0.74	2.38 0.92	1.63 1.06	1.88 0.83	1.96 0.90
1	Stressful	3.75 0.46	3.38 0.52	3.50 0.76	3.50 0.76	3.38 0.52	3.38 0.52	3.48 0.59
3	Difficulty in marking answer scripts	2.25 0.71	2.38 0.74	2.00 0.53	2.75 0.71	2.25 0.46	1.88 0.64	1.88 0.56
4	Nonchalant attitude to examinations	3.00 0.53	3.50 0.53	3.00 0.00	3.13 0.64	2.88 0.35	3.38 0.52	2.67 0.37
5	Attitude affected by poor students’ performance	2.50 0.76	1.88 0.64	2.25 0.46	2.63 0.74	2.25 1.04	2.25 0.89	2.29 0.76
6	Examination questions are not up to standard	4.00 0.00	3.88 0.35	3.50 1.07	4.00 0.00	0 0.0%	3.75 0.71	3.19 0.36
7	Less enthusiasm due to improper examination conduct	3.75 0.46	3.88 0.35	3.63 0.74	3.25 1.04	3.88 0.35	3.88 0.35	3.71 0.55
8	Induced Thoroughness in teaching	2.50 1.07	2.50 0.76	2.63 1.19	2.88 0.35	2.00 0.93	2.62 0.52	2.09 0.72
9	Task of completing chemistry subject’s schemes	2.63 0.92	3.00 0.76	3.38 0.52	3.25 0.46	3.25 0.71	2.88 0.64	2.04 0.44
10	On completing subjects syllabi before examinations	4.00 0.00	4.00 0.00	3.63 0.52	3.88 0.35	4.00 0.00	4.00 0.00	3.92 0.15
	Grand Mean & Std Dev	2.55 1.05	2.43 1.01	2.48 0.95	2.78 1.05	1.09 0.93	2.41 1.04	2.29 1.00
	Total Mean & Std Dev	30.25 2.12	30.00 2.00	29.88 2.17	31.63 1.85	28.88 3.09	29.88 1.81	30.08 2.25

Table 34 shows that majority of the teachers accepted that the unified examinations programme “ensures the completion of subjects syllabi before the examination”, with a mean response of (3.92>2.50); followed by (3.71>2.50) mean response on “the teachers being less enthusiastic about

the examination due to improper conduct”, (3.48>2.50) mean response on the “unified examination programme is very stressful”, (3.19>2.50) as mean response on “the unified examination do not measure up to standard”, (2.67>2.50) mean response on the “teachers have non-challant attitude to the examination”, (2.29<2.50) mean response on” teachers’ attitude is affected by poor students’ performances”, (2.09<2.50) mean response for “the unified examination programme make teachers more thorough in their teaching, (2.04<2.50) mean response for “the completion of chemistry scheme of work is quite tasking”, (1.96) mean response on “the teachers are indifferent to students’ poor performance”, and (1.88<2.50) mean response for difficulty in marking answer scripts. The table also shows that District 4 had the highest mean response of (2.78>2.50) on teachers’ attitude to unified examination, followed by District 1 (2.55>2.50), then by District 3 (2.48 <2.50), District 2 (2.43<2.50), District 6 (2.41<2.50), and District 5 (1.09<2.50). Thus on a general note, teachers from Education District 4 emerged with the highest average attitude (31.63) to the Unified Examination Programme, this was followed by District 1 (30.25), District 2 (30.00), District 3, 5, and 6 (29.88). Comparing the average (mean) response (31.63) in District 4 with the responses from other Districts, meagre differences in the responses were noticed. The overall response in District 4 differs meagrely from that of District 1 by 1.38, differs from District 2 by 1.63, and differs from District 3, 5, and 6 by 1.75.

One-way ANOVA statistics was used to determine if significant difference existed in the attitude of the teachers towards the Unified Examination Programme and the result is shown in the Table 35;

Table 35: One-way Analysis of Variance of the Teachers' Attitude towards the Unified Examination Programme in the Public Secondary Schools across the Six Education Districts in Lagos State

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-tab.	Remark
Between Districts	31.667	5	6.333	1.291	0.286	2.44	H₀ is not rejected.
Within Districts	206.000	42	4.905				
Total	237.667	47					

Significant at = 0.05, df = 5 and 42, critical F = 2.44 **F- calculated < F- critical**

Evidence from Table 35 reveals that the F-calculated value of 1.291 is less than F-critical value of 2.44 given 5 and 42 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis is not rejected. It implies that no significant difference exists in the teachers' attitude towards the Unified Examinations programme in the public secondary schools across the six Education Districts.

Hypothesis 4b: There is no significant difference in the teachers' school attendance patterns in the public secondary schools across the six Education Districts in Lagos state.

One – Way Analysis of Variance statistics was used to test this hypothesis as shown in Tables 36 and 37 below:

Table 36: Descriptive Data of the Teachers' Attendance Pattern across the Six Education Districts in Lagos State

			District 1	District 2	District 3	District 4	District 5	District 6	
Statements			Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Ave. Mean/ Std. Dev.
	1	Attendance at school		2.88 0.35	2.88 0.64	3.13 0.99	3.13 0.83	2.75 0.46	3.25 0.46
2	Attendance at morning assembly		2.88 0.64	3.13 0.35	3.00 0.53	3.25 0.46	2.88 0.64	3.00 0.00	3.02 0.44
3	Attendance at staff meetings		2.13 0.64	2.00 0.76	2.13 1.13	2.50 1.19	1.88 0.64	2.13 0.64	2.13 0.83
4	Attendance at PTA meetings		3.25 0.46	3.75 0.46	3.25 0.46	3.50 0.53	3.13 0.35	3.25 0.71	3.36 0.50
5	Attendance at classes		3.88 0.35	3.63 0.52	3.63 0.52	3.63 0.52	3.50 0.53	3.38 0.52	3.61 0.49
6	Attendance at invigilation		4.00 0.00	3.88 0.35	3.88 0.35	3.63 0.52	4.00 0.00	4.00 0.00	3.90 0.20
Grand Mean & Std Dev			3.17 0.49	3.21 0.55	3.17 0.73	3.27 0.71	3.02 0.52	3.17 0.47	3.17 0.58
Total Mean & Std Dev			19.00 1.51	19.25 1.39	19.00 2.07	19.63 2.33	18.13 1.46	19.00 1.07	19.00 1.66

Results from Table 36 above show that that the teachers had high attendance at invigilation (3.90>2.50), high attendance in classes (3.61>2.50), high attendance at PTA meetings (3.36>2.50), high attendance at morning assembly (3.02>2.50), high attendance at school (3.00>2.50) and low attendance at staff meetings (2.13<2.50).

The table equally shows that District 4 emerged with the highest mean response of (3.27>2.50) on teachers' attendance pattern in the Public Schools, followed by District 2 (3.21>2.50), then by Districts 1, 3, 6 (3.17>2.50), and District 5 (3.02>2.50). Thus on a general view, teachers from District 4 emerged with the highest average attendance pattern (19.63), this was followed by District 2 (19.25), District 1, 3, and 6 (19.00), District 5 (18.13). Comparing the average (mean) response (19.63) in District 4 with the responses from other Districts, meagre differences in the responses were noticed. The overall response in District 4 differs meagrely from that of District 1, 3, and 6 by 0.63, differs from District 2 by 0.38, and differs from District 5 by 1.50.

One-way ANOVA statistics was used to determine whether or not there is any difference in the teachers' attendance pattern across the six Education Districts in Lagos State Public Schools;

Table 37: One-way ANOVA statistics of Difference of Teachers' Attendance Patterns in the Public Secondary Schools across the six Education Districts

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-tab.	Remark
Between Districts	9.750	5	1.950	0.681	0.640	2.44	H₀ is not rejected.
Within Districts	120.250	42	2.863				
Total	130.000	47					
Significant at 0.05; df = 5 and 42, critical F =2.44					F- calculated < F- critical		

Table 37 above reveals that the calculated F-value of 0.681 obtained is less than critical F-value of 2.44 given 5 and 42 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis was accepted. This means there is no significant difference in the teachers' attendance pattern in the public secondary schools across the six Education Districts in Lagos State.

Hypothesis 5a: There is no significant difference in the students' attitude towards the Unified Examination Programme in the public secondary schools across the six Education Districts in Lagos state.

One – Way ANOVA statistics was used to test the hypothesis, the result is presented Tables 38 - 40 below;

Table 38: Descriptive Data on Students' Attitude towards the Unified Examination Programme across the Six Education Districts in Lagos State

		District 1	District 2	District 3	District 4	District 5	District 6	
Statements		Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.Dev.	Ave.Mean /Std. Dev.
1	Enabled teachers' regularity in classes	3.51 0.72	3.62 0.58	3.65 0.52	3.54 0.60	3.68 0.53	2.98 0.80	3.50 0.63
2	Assisted seriousness in academics	3.59 0.69	3.68 0.53	3.74 0.52	3.59 0.65	3.64 0.59	3.33 0.64	3.60 0.60
3	Serious studies for promotion to next class	3.02 1.06	3.13 0.84	3.31 0.83	3.16 0.88	2.98 0.90	2.57 1.13	3.03 0.94
4	Compulsory school attendance	3.04 0.91	2.91 0.79	2.91 0.81	2.87 0.91	2.68 0.79	2.60 1.10	2.84 0.89
5	Teachers' unbiasedness	3.63 0.51	3.52 0.54	3.47 0.73	3.54 0.65	3.41 0.62	2.82 1.16	3.40 0.70
6	Beneficial of the examination	3.83 0.38	3.66 0.51	3.78 0.48	3.78 0.43	3.68 0.51	3.67 0.49	3.73 0.47
Grand Mean & Std. Dev.		3.44 0.78	3.42 0.66	3.48 0.68	3.41 0.74	3.35 0.69	3.00 0.97	3.35 0.75
Total Mean & Std. Dev.		20.62 2.38	20.52 2.38	20.86 2.51	20.49 2.56	20.07 2.35	17.96 4.24	20.09 2.96

Table 38 shows that most students find the unified examination very beneficial (3.73>2.50), the unified examinations programme is making most of them take their academics more serious (3.60>2.50), the examination makes most students regular in classes (3.50>2.50), most students take their academic serious so as to be promoted to the next class (3.03>2.50), and the unified examination is making most of the students attend school compulsorily (2.84>2.50). The table also shows that District 3 had the highest mean response of (3.48>2.50) on students' attitude towards the unified examinations programme, followed by District 1 (3.44>2.50); District 2 (3.42>2.50); District 4 (3.41>2.50), District 5 (3.35>2.50) and District 6 by (3.00>2.50) and on a general view, students from District 3 possessed the highest rated attitude (20.86) to the Unified Examinations Programme, this was followed by District 1 (20.62), District 2 (20.52), District 4 (20.49), District 5 (20.07), and District 6 (17.96). Comparing the highest attitude in District 3 with the attitude from other Districts, some differences in the responses were noticed. The overall response in District 3

differs from that of District 1 by 0.24, differs from District 2 by 0.34, differs from District 4 by 0.37, differs from District 5 by 0.79, and differs from District 6 by 2.89.

One way ANOVA statistics was used to determine whether significant difference existed in the public schools students' attitude to the unified examinations programme across the six Education Districts in Lagos State and the result is shown below;

Table 39: One -way (ANOVA) of Differences in the Students' Attitude towards Unified Examination Programme across the six Education Districts in Lagos State.

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-tab.	Remark
Between Districts	917.621	5	183.524				
Within Districts	7575.375	954	7.941	23.112	0.000	2.22	H₀ is Rejected.
Total	8492.996	959					

Significant level = 0.05; df=5 and 954, critical F = 2F- calculated > F- critical

Table 39 above show that the calculated F-value of 23.112 is greater than the critical F- value of 2.22 given 5 and 954 degrees of freedom at 0.05 level of significance. Thus the null hypothesis was rejected. This means that significant difference exists in the students' attitude towards the Unified Examinations Programme in the public secondary schools across the six Education Districts in Lagos State.

LSD Multiple Comparison Post Hoc Test analysis was utilized to establish the Education Districts from which the significant difference in the students' attitude towards the unified examinations programme were, the result is presented in the table below:

Table 40: LSD Multiple Comparison Post Hoc Test of Difference in the Students' Attitude towards Unified Examinations Programme across the Six Education Districts in Lagos State

(I) Education Districts	(J) Education Districts	Mean Difference(I-J)	Sig. (p) value
District 1	District 2	0.10	0.75
	District 6	2.66*	0.00
District 2	District 6	2.56*	0.00
District 3	District 5	0.79*	0.01
	District 6	2.89*	0.00
District 4	District 6	2.53*	0.00
District 5	District 6	2.11*	0.00

The table of multiple comparison reveals that students' attitude towards Unified Examination programme in District 6 was significantly less than that in all the Districts (District 1: mean difference = -2.66, $p = 0.000 < 0.05$; District 2: mean difference = -2.56, $p = 0.000 > 0.05$; District 3: mean difference = -2.89, $p = 0.000 < 0.05$; District 4: mean difference = -2.53, $p = 0.000 < 0.05$; District 5: mean difference = -2.11, $p = 0.000 > 0.05$); It is also noteworthy that the observed differences between District 2 and 6 (Mean difference = -2.56, $p = 0.000 < 0.05$) and between District 3 and 5 (Mean difference = -0.79, $p = 0.01 < 0.05$) were also statistically significant.

Hypothesis 5b: There is no significant difference in the students' school attendance patterns in the public secondary schools across the six Education Districts in Lagos state.

One – Way Analysis of Variance statistics was used to test this hypothesis in Tables 41 - 43;

Table 41: Descriptive Data of the Students' Attendance Patterns in the Six Education Districts in Lagos State

		District 1	District 2	District 3	District 4	District 5	District 6	
Statements		Mean/ Std.Dev.	Mean/ Std.Dev.	Mean/ Std.De	Mean/ Std.Dev.	Mean/ Std.Dev	Mean/ Std.Dev.	Ave. Mean /Std. Dev.
1	Attendance at school	2.88 0.33	2.88 0.60	3.13 0.93	3.13 0.78	2.75 0.43	3.25 0.43	3.00 0.58
2	Punctuality to School	2.87 0.60	3.13 0.33	3.00 0.50	3.25 0.43	2.88 0.60	3.00 0.00	3.02 0.41
3	Attendance at assembly	2.13 0.60	2.00 0.71	2.13 1.06	2.50 1.12	1.88 0.60	2.13 0.60	2.13 0.78
4	Attendance at classes	3.25 0.43	3.75 0.43	3.25 0.43	3.50 0.50	3.13 0.33	3.25 0.66	3.36 0.46
5	Attendance at extracurricular activities	3.88 0.33	3.63 0.49	3.63 0.49	3.63 0.49	3.50 0.50	3.28 0.49	3.09 0.47
6	Attendance at examinations	2.88 0.60	3.13 0.33	3.63 0.49	3.38 0.49	3.88 0.33	3.38 0.49	3.38 0.46
	Grand Mean & Std Dev.	2.98 0.46	3.09 0.51	3.13 0.68	2.73 0.66	3.00 0.49	3.05 0.44	3.00 0.54
	Total Mean & Std Dev.	17.88 1.54	18.50 1.59	18.78 1.99	19.38 2.79	18.00 1.50	18.38 1.22	18.48 1.90

Results from Table 41 reveal that the students had high attendance at examinations (3.38>2.50), high attendance in classes (3.36>2.50), high attendance at extracurricular activities (3.09>2.50), and high level of punctuality to school (3.02>2.50), high attendance at school (3.00>2.50) and low attendance at assembly (2.13<2.50). The table also shows that District 3 had the highest mean response of (3.13>2.50) on students' attendance pattern in the public schools, followed by District 2 (3.09>2.50), then by District 6 (3.05>2.50), by District 5 (3.00>2.50), by District 1 (2.98>2.50) and District 4 (2.78>2.50). Thus on a general view, students from District 4 (19.38) emerged with

the highest average (mean) school attendance pattern, this was followed by District 3 (18.75), District 2 (18.50), District 6 (18.38), District 5 (18.00), District 1 (17.88).

One-way ANOVA statistics was used to determine if there was any significant difference in the attendance patterns of the students across the six Education Districts and the result is presented in the Table 42;

Table 42: One - way Analysis of Variance (ANOVA) of Difference in the Students' Attendance Patterns in the public Secondary Schools across the Six Education Districts

	Sum of Squares	d.f.	Mean Square	F-calc.	Sig. (p) value	F-tab.	Remark
Between Districts	237.083	5	47.417				
Within Districts	3242.500	954	3.399	13.951	0.000	2.22	H₀ is Rejected.
Total	3479.583	959					
Significant at 0.05, df = 5 and 954, critical F = 2.22				F- calculated > F- critical			

Evidence from Table 42 shows that the calculated F- value of 13.951 is greater than the critical F- value of 2.22 given 5 and 954 degrees of freedom at 0.05 level of significance. Therefore the null hypothesis was rejected. It implies that significant difference exists in the students' attendance pattern in the public secondary schools across the six Education Districts in Lagos State. LSD Multiple Comparison Post Hoc Test analysis was utilized to establish the Education Districts from which the significant differences in the students' attendance patterns in the public secondary schools across the six Education Districts in Lagos State were, the result is presented in the table 43:

Table 43: LSD Multiple Comparison Post Hoc Test of Difference in the Students' Attendance Patterns across the Six Education Districts in Lagos State

(I) Education Districts	(J) Education Districts	Mean Difference(I-J)	Sig. (p) value
District 1	District 2	-0.63*	0.002
	District 3	-0.88*	0.00
	District 4	-1.50*	0.00
	District 6	-0.50*	0.02
District 2	District 4	-0.88*	0.00
	District 5	0.50*	0.02
District 3	District 4	-0.63*	0.002
	District 5	0.75*	0.000
District 4	District 3	0.63*	0.002

Evidences from the table of multiple comparisons above show that students' attendance pattern in District 1 was less than that in all the other Districts (District 2: mean difference = -0.63, $p = 0.002 < 0.05$; District 3: mean difference = -0.88, $p = 0.00 > 0.05$; District 4: mean difference = -1.50, $p = 0.00 < 0.05$; District 6: mean difference = -0.50, $p = 0.02 < 0.05$; District 5: mean difference = -0.13, $p = 0.54 > 0.05$); it is noteworthy that the observed differences between District 1 and Districts 2, 3, 4, and 6 were observed to be statistically significant., but the differences between District 1 and District 5 was not statistically significant. Hence, it could be inferred that the source of statistical significance in the students' attendance pattern could only be traced to exist between District 1 and 2, District 1 and 3, District 1 and 4, District 1 and 5, District 2 and 4, District 2 and 5, District 3 and 4, District 3 and 5, and District 4 and 5.

Hypothesis 6: There is no significant difference between the procedures for constructing Unified Examinations items in Lagos state and the standard process guiding test items construction.

In order to test this hypothesis, paired - samples *t*-test was employed, and the result obtained is shown in table 44 below;

Paired Sample *t*-Test analysis was used to determine if significant difference exist between the process for constructing the unified examinations questions and standard process guiding test item construction and the result is presented in the table 44;

Table 44: Paired-Samples *t*-Test of Difference between the Process of Constructing Unified Examinations Test Items and the Standard Process Guiding test Item Construction

Modes of Item Construction	N	Mean	Std. Dev.	d.f.	t-cal.	Sig.(p) value	Decision
Procedure Items for Constructing Unified Examinations		17.33	1.18				
Item Construction: StandardProcess		8.00	1.31	14	17.559	0.000	H ₀ is Rejected
	15	9.33	2.06				

Significant at 0.05, df = 14, t-critical = 2.146

Evidence from Table 44 reveals the mean and standard deviation on procedure for constructing Unified Examinations to be 17.33 and 1.18 while the mean and standard deviation on standard process guiding test item construction are 8.00 and 1.31 respectively. This difference in mean scores was found to be statistically significant ($t_{14} = 17.559$, $p = 0.000$). Therefore the null hypothesis is rejected. This means there is significant difference between the procedure for

constructing unified examinations test items in Lagos state and standard process guiding test items construction.

Hypothesis 7: There is no significant relationship between the performances of students in unified chemistry examinations questions and that of chemistry achievement test.

Pearson Product Moment Correlation Analysis was used to test the hypothesis and result is presented in the table below;

Table 45: Pearson Correlation of the Relationship between Students' Performances in Unified Examinations in chemistry and in the Chemistry Achievement Test

Variables	Mean	Std. Dev.	N	<i>r</i> - calculated	<i>Sig.</i> (<i>p</i>) value	Remark	Decision
Unified Chemistry Examinations	32.68	8.10	960	-0.010	0.746	Not Significant	<i>H₀</i> is not rejected
Chemistry Achievement Test	17.74	5.75					

d.f = 958; *p* = 0.746 > 0.05, *r*-calculated = -0.010; *r*--critical = 0.196; *r*-calculated < *r*-critical

Numerical evidences from Table 45 show that the mean (average) performances of the sampled students in Unified Chemistry Examinations (32.68) is more than the mean (average) students' performance in the chemistry achievement test (17.74). More so, the *r*-calculated (0.010) implies that there is a small negative relationship between students' performances in the Unified Chemistry Examinations and their performances in the Chemistry Achievement Test. This *r*-calculated was computed with a significant value of (*p*-value = 0.746) which is greater than the statistical benchmark of 0.05. Thus the null hypothesis was not rejected. This implies that students' performances in the unified chemistry questions could not significantly predict their performances in a chemistry achievement test.

4.3 Summary of Findings

The following make up the summary of the findings:

1. There is uniformity in the scoring criteria used in the public secondary schools across the six Education Districts in Lagos State.
2. The promotion criteria used in the public secondary schools across the six Education Districts in Lagos State are not uniform.
3. There is uniformity in the mode of administration and supervision of the Unified Examination papers in the public secondary schools across the six Education Districts in Lagos State.
4. There is uniformity in the rate at which teachers in the public secondary schools in the six Education Districts in Lagos state complete the chemistry subject schemes.
5. There is uniformity in the teachers' attendance pattern and attitude towards the Unified Examinations Programme in the public secondary schools across the six Education Districts in Lagos State.
6. The students' attendance pattern and attitude towards the Unified Examinations vary from one Educational District to another in Lagos State.
7. The procedure for constructing the Unified Examination test items in Lagos state significantly vary from the standard process guiding test item construction.
8. The students' performances in the unified chemistry examinations could not significantly predict their performances in a chemistry achievement test.

4.4 Discussion of findings:

The findings from hypothesis one (1a) revealed that the teachers in the Lagos State Public Secondary Schools use uniform scoring criteria for the scoring of the unified examinations papers.

The reason for this could be due to adequate monitoring of the examinations and the provision of

marking guide in most cases. The result agrees with Boston's (2002) assertion that a good set of scoring criteria provides a way to make fair and sound judgements by setting uniform set of precisely defined guidelines that will be used to judge students' work. The findings is in line with Yoloeye's (2008) assertion that teachers should prepare detailed marking schemes for each question so as to identify the expected answer in each question and state how many marks to award to each answer. The result also align with Nwana's (2007) finding that one of the principal advantages of marking with a marking scheme is that it produces highly consistent results and since all the students are being marked on the same terms, students who mention the same points will most probably score the same marks.

The findings from hypothesis one (1b) showed that uniform promotion criteria are not being used to promote students in the public secondary schools. This could be due to fact that the school principals sometimes use their discretion to promote students in the public schools in order to prevent drop-out of students or due to parental pressure. This result is in agreement with Webb and Bunten's (2012) finding that in an effort to maintain students' interest in school and to prevent them from dropping out of school, schools' management sometimes consider age and maturity as well as achievement to decide whether to promote students. The findings also aligns partly with Nkpa's (2011) findings that due to pressure from parents, the wish of school authorities to retain if not increase their schools' population and the desire of government to create greater access many unqualified learners are automatically promoted from one class to the other. He however asserts that there is the need to return to the system that established minimum standards of performance below which a student has to repeat a class. In the researcher's opinion, those students who have not acquired the pre-requisite experience that should form the basis for successful learning in a subsequent class should ideally not be moved to that subsequent class. This could be one of the

factors adversely affecting the quality and standard of education in the State. The study contradicts the assertions of Westhuizen and Basson(2011) that a school's promotion policy is an integral component of its overall educational policy and as such students should not be allowed to progress from one grade level to the next or receive a high school diploma until they met specific performance standards.

The findings from hypothesis two (2a) have confirmed that no significant difference exist in the mode of administration of the unified examinations papers in the Public Secondary Schools in the six Education Districts in Lagos State. This could be due to adequate monitoring of the examinations by the District and Zonal inspectors. The result aligns with Hertz and Chinn's (2000) assertion that administrative procedures are as critically important to the reliability and validity of an examination as the examination development procedures. The findings are also in alignment with Kaplan and Saccuzzo's (2005) assertion that testing requires standardized conditions because situational variables can affect test scores. In their view, a test manual should spell out clearly the direction for administration and such directions should be sufficiently detailed to be duplicated in all situations in which the test is given. They further asserted that a good test manual gives the test examiner instruction that include the exact words to be read to the test takers. It also includes questions that the test takers are likely to ask and the instructions on how administrators should answer them. The findings also agree with Baker's (2003) opinion that effective and ethical use of standardized test scores requires that the examiner be proficient in test administration and understand the basic measurement and statistical concept behind the interpretation process. The findings also agrees with Adikwu's (2008) believe that the formulation of detailed direction with regard to the administration of an examination involves the exact materials employed, time limits for the examinations, instructions and examples of the test procedure.

The findings from hypothesis two (2b) has shown that no significant difference exist in the mode of supervising the unified examinations programme in Lagos State. This could equally be due to adequate monitoring of the examinations by the District and Zonal inspectors. The finding is also in alignment with Kaplan and Saccuzo's 2005 findings that examination supervisors must consider that the test may not remain reliable or valid if they deviate from the specified instructions. The findings also agree with Jaiyeoba and Atanda's (2011) findings of a positive relationship between supervision of examination and school quality. The findings equally agree with Wasanga and Ramani's (2010) position that monitoring is an activity that is carried out periodically during the administration exercise of an examination for the purpose of auditing the authenticity of the exercise in terms of adherence to prescribed procedure. They further assert that the key aspects that should be monitored include: specifications for sitting arrangement; security arrangement; number of supervisors and invigilators per examination centre; qualification of supervisors and invigilators; examination irregularities and role of school administrator during the examinations.

The findings from hypothesis three (3) of the study have confirmed that no significance difference exists in the frequency of completion of the science subject schemes in the public secondary schools in the six Education Districts in Lagos State. The result align with Moskal's (2000) believe that uniform syllabi are intended to nullify differences across board so as to bring about good and uniform standards. The findings is also in line with Owolabi's (2004) submission that schools and candidates must ensure coverage of the syllabus and schemes of work as an integral part of their preparation for examinations. The findings also agrees with the findings of Kimani, Kara and Njagi (2013) that inability of the teachers to complete the syllabi contributed significantly to low academic achievements of students in schools. The study is also in tandem with Nwakoby and Lewin's (1992) assertion that schemes of work are an indication of the extent to which teachers had

been able to assume direct responsibility for converting the given curriculum and localizing it in the form of schemes and notes of lessons for application to their specific context. The finding align with the findings of Musasia, Nakhanu and Wekesa (2012) who found out that students who cover the syllabus in mathematics had better mean scores than those who failed to cover the syllabus. The findings equally agree with Suen and McClellan (2003) submission that uniform syllabi are intended to nullify differences across board so as to bring about good standards.

The findings of the study in hypothesis four (4a) have revealed that no significant difference exist in the teachers' attitude to the unified examinations in the public secondary school across the six Education Districts in Lagos State. The result conform to Asikhia's (2010) finding that negative attitude of some teachers to their jobs as is reflected in their poor attendance to lessons, lateness to school and poor method of teaching among others affect students' academic achievement. The findings also agree with Onoshakpokaiye's (2011) assertion that students will learn and be trained if teachers use good methods and have positive attitude towards his or her teaching. The researcher affirms that students draw from their teachers' disposition to form their own attitude which may eventually affect their learning outcomes, thus attitude of teachers towards their students must be positive so as to carry the students along. In the researcher's view, if a teacher develops a positive attitude towards his or her job, it would make the teacher to work harder towards the success of his students and when students notice that their teachers are hard- working and show concern for them, it motivates them and will result in good performance. The researcher also found out that students' positive attitude towards science subjects could be enhanced by the teacher related factors such as teachers' enthusiasm, resourcefulness and helpful behaviour. The findings equally agrees with Nakpodia's (2011) argument that since the activities of the teachers and students are

interdependent, therefore understanding of the knowledge, skills and attitude of teachers are necessary for providing insights into classroom management and supervisory problems in schools.

The findings of the study in hypothesis four (4b) have revealed that no significant difference exist in the teachers' school attendance patterns in the public secondary school across the six Education Districts in Lagos State. The result aligns with Al-Hassan and Odames' (2014) assertion that teachers' absenteeism leads to the loss of class work hours and poor guidance for the pupils. The findings also align with Jones's (2006) findings that excessive absenteeism on both the teachers and students parts affects students' achievement and performance, teachers' instruction and effectiveness, principal discipline, administration and funding. The researcher further asserts that non - attendance at school is an early warning sign of future problems that can negatively affect students' achievements. The result of the study is in line with the findings of Kimani et al (2013) that incidence of lateness to school and absenteeism significantly contributed to students' low academic achievement.

The findings of hypothesis five (5a) have revealed that significant difference exist in the students' attitude to the unified examinations programme across the six Education Districts in the public secondary schools in Lagos State. The findings also agree with Onoshakpokaiye (2011) findings that attitude is an individual's prevailing tendency to respond either favourably or unfavourably to an object (person, group of people, institution or event). In his view, attitude has serious implication for the learner, the teacher, the immediate social group with which individual learning relates and the school system as a whole. The findings equally agree with Khan and Ali's (2012) identification of factors such as teaching methods, teachers' attitude, cognitive style of learners, career interest as influencing students' attitude to chemistry. The findings also align with Nakpodia (2011) argument that it is equally important to be aware of the perception of students in terms of their knowledge,

skills, abilities, attitude and expectations of the teachers' effectiveness. The researcher notes that the role of the teacher in helping the students achieve the objective of the instrument in their various fields of endeavour stands paramount.

The findings of hypothesis five (5b) have revealed that significant difference exist in the students' school attendance pattern across the six Education Districts in the public secondary schools in Lagos State. The result agrees with the findings of Darmody (2008) and Hanger, Goldenson, Weinberg, Sciborski and Monzon (2009) who identified regular and punctual school attendance as one of the most important factors affecting students' success in schools. The study also aligns with Davis and Lee's (2008) findings that the main reasons for non-attendance in schools include bullying, poor relations with teachers, inability to engage with a large organization, sicknesses as well as transitions and transfers. The study equally agrees with Van- Veen (2008) findings that non-attendance is lower if teaching and learning are personalized, if students feel "missed", if students like to be at school and that personal contact with the parents on attendance is vital. The findings aligns with Kimani et al' (2013)'s assertion that incidences of lateness and absenteeism also contributed to low academic achievement of students in schools. On the other hand the result contradicts Lombardi and Oblinger (2008)'s opinion that students engage with subject matter based on their expectations about how their achievement will be evaluated. According to them, assessment defines what students regard as important, how they spend their time and how they come to see themselves as students. The results also however contradicts Wasanga and Ramani (2010)'s assertion that examinations have significant influence in shaping the behavior of the youth and their future.

The findings of the study in hypothesis six (6) have revealed that significant difference exist between the procedures for constructing the unified Examination test items and standard process.

This could be due to the fact that the unified examinations questions do not pass through State Examination Board and the fact that the item writers are not trained in the process of item writing. The result agrees with the findings of Suen and McClellan (2003), according to these researchers, sound design and construction of test items basically follow the principles of discrimination, score variance, reliability and validity for the intended interpretation and use of scores from the overall test. According to these researchers, item writers must be individuals knowledgeable in the field and are able to understand the test specifications. The findings also align with the West African Examinations Council's (WAEC, (2011) assertion that writing test items is a matter of precision, perhaps more akin to computer programming than to writing prose. A test item must focus the attention of the examinee on the principle or construct upon which the item is based. The findings equally agree with Owolabi's (2004) affirmations that examination bodies should have skilled personnel to undertake test item development exercises. The findings also agree with Adikwu's (2008) claim that standardized tests are tests that are carefully constructed by expert test developers and have items of known psychometric properties and standard conditions for grading and interpreting scores. The findings agree with Adedokun's (2012) assertion that a good test must follow the general principles of test construction: statement of the objectives; specification of the content to be covered; preparation of the test blue print; preparation of the test items; trial testing and item analysis.

The findings of hypothesis seven (7) reveal that there is no significant relationship between students' performances in unified chemistry examinations questions and their performances in a chemistry achievement test. The analysis conforms to the findings of Worthein and Borg (1993) that a well-organized and carefully developed curriculum embedded and standardized test can serve the purpose of diagnosing, evaluating and grading of individual student's actual performance.

The findings also align with the earlier findings of Obioma and Salau (2007) who found poor correlation between students' performances in public examinations and their performances in the universities. The researchers recommended an improvement in the quality of assessment instruments used in both public and university examinations and mandatory inclusion of experts in measurement and evaluation in the post – university matriculation screening committee. The finding also contradicts Omirin and Ale (2008) findings of significant positive correlation between students' scores in WASSCE and Mock Mathematics and English Language. The findings agree with Soi's (2012) believes that the problem facing the effectiveness of mock examinations is the lack of enough qualified subject setters who are trained markers. The researcher opines that subject panels should be formed in the Education Districts to set, moderate, proof read and mark mock examinations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Study

Assessment of unified examinations programme in the public secondary schools system in Lagos State has become imperative in view of the consistently low academic performances of the public secondary schools students in certifying examinations over the years. Therefore the need to determine the extent to which the objectives of setting up the unified examinations programme is being achieved and the effectiveness of the programme is sine quanon. This study focused on assessment of unified examinations programme in selected science subjects because the development of any nation depends largely on the level of her scientific and technological literacy. To carry out this assessment, the Context, Input, Process and Product assessment model by Guba and Stufflebeam (1970) formed the framework that was used to guide the assessment.

The purpose of the study was basically to determine if uniform assessment procedures were used to assess students in the public secondary schools in Lagos State among others. To guide the study, seven research questions and hypotheses were generated. Among the research questions and hypotheses generated are “Is there any significant difference in the scoring criteria used in the public secondary schools in the six Education Districts in Lagos State?”

And “there is no significant difference in the promotion criteria used to promote students in the public secondary schools in the six Education Districts in Lagos State.” The study is significant because the findings will help the unified examinations programme administrators in the State Education Districts to analyse the performance and effectiveness of the Unified Examinations Programme so far. It could be used to monitor students’ achievement over time to determine whether the quality of education is rising, falling or remaining constant. The Review of Related

Literature was carried out under the following sub-topics: Concept of unified examinations; Assessment and evaluation; Formative and summative assessment; The Context, Input, Process and Product [CIPP] model among others. Under the Methodology of the Study, Descriptive Survey Research Design was used. The population of the study comprised all the unified examinations programme personnel at the Basic Education Service Department of the Ministry of Education, the unified examinations programme administrators (unified examination officers at the Education Districts, the principals and vice principals of the public secondary schools), Heads of Departments, teachers and all the senior secondary school two (SS2) students in Lagos State public secondary schools.

The sampling procedure used for this study was multi-stage sampling technique. Two education zones were randomly selected from each Education District. Simple random sampling technique was used to select: Forty eight (48) senior secondary schools (eight senior secondary schools from each Education District); twenty two SS2 science students from each of the randomly selected senior secondary schools. (One thousand and fifty (1056) six SS2 students. However only nine hundred and sixty (960) SS2 science students' responses were found usable for the study; One hundred and eight (108) unified examination administrators comprising the principals, vice principals of the sampled schools and twelve unified examinations personnel from the six Education Districts Offices (eighteen (18) unified examinations programme administrators per Education District); Fifteen unified examination programme personnel comprising all the Levels eight and above officers from the Basic Education Service (BES) unit at the Ministry of Education who were purposively sampled due to their schedule; Forty eight (48) heads of science department, forty eight (48) science teachers and the forty eight (48) SS2 science class teachers of the randomly selected senior secondary schools were also involved in the study. Therefore the total number of participants for the study was one thousand, two hundred and twenty seven (1227). The

main instruments for data collection were the Programme Assessment Questionnaire (TAQ) which was adapted from World Bank Systems Assessment Questionnaire which had the Basic Education Services and science Teachers versions, the Students Attitude to the Unified Examinations Questionnaire (SAUEQ) which is the researcher developed questionnaire, the Administration and Supervision of Unified Examinations Questionnaire (ASUEQ), the Teachers' Assessment Questionnaire (TAQ) and the Chemistry Achievement Test (CAT) which were the researcher developed questionnaires.

The data generated were analysed using one – way analysis of variance (ANOVA), paired sample t-test and Pearson Product Moment Correlation Coefficient at 0.05 level of significance.

The study revealed significant differences in the promotion criteria used in the six Education Districts in Lagos State, in the students' school attendance and attitude to the unified examinations programme, the procedure for constructing the unified examinations questions and the standard process guiding test item construction as well as in the performances of students in the unified chemistry questions and a chemistry achievement test. Discussions based on findings from the study were made. It is recommended that the construction of the unified examinations programme should be conducted by the Lagos State Examinations Board and that the item writers should be trained on the process of test items construction.

5.2 Conclusions

In consideration of the above discussions and summary of findings, the following conclusions can be drawn:

- 1a. All the Education Districts in Lagos State use uniform scoring criteria in scoring the unified examinations papers in the public secondary schools.
- 1b. There is uniformity in the promotion criteria used in promoting students in the public secondary

schools across the six Education Districts in Lagos State.

2a. There is uniformity in the modes of administration of the unified examinations papers in the public secondary schools in the six Education Districts in Lagos State.

2b. There is uniformity in the modes of supervision of the unified examinations papers in the public secondary schools Education District to the other in Lagos State.

3. The rate of completion of the science subject schemes by the science teachers in the public secondary schools did not significantly differ in the six Education Districts in Lagos State.

4a. The science teachers' attitude to the unified examinations programme did not significantly differ in the public secondary schools in the six Education Districts in Lagos State.

4b. The science teachers' school attendance patterns did not significantly differ in the public secondary schools in the six Education Districts in Lagos State.

5a. The students' attitude to the unified examinations programme differed significantly in the public secondary schools in the six Education Districts in Lagos State.

5b. The students' school attendance patterns differed significantly in the public secondary schools in the six Education Districts in Lagos State.

6. The procedures for constructing the unified examinations test items differed significantly from the standard process guiding test items construction in Lagos State.

7. The performances of students in the chemistry achievement test differed significantly from their performances in the unified chemistry examination questions.

5.3 Contributions to Knowledge

1. The study established that unified examinations make the public secondary schools' teachers to complete the subjects' schemes.

2. The thesis equally confirmed that the unified examinations have positive influence on the teachers' attitude towards their responsibilities and their school attendance patterns.
3. The study has given more visibility to the unified examinations programme regarding the policy's efforts.
4. The research developed and validated research instruments that could be adapted for use in other subject areas and by other States in Nigeria that have adopted the unified examinations programme to ascertain the quality and standard of their unified examination questions.
5. The thesis has added to the body of knowledge on the concept of unified examinations in Nigeria and also provides a lead to further research on unified examination programmes.

5.4 Implication of findings

- The research established that uniform scoring criteria are used to score the unified examinations papers in the public secondary schools in Lagos State. The implication of this is that students who give similar responses to an examination question are likely to be awarded similar scores and thus students' scores in the various subjects can be compared across the six Education Districts.
- The study established that the promotion criteria used in the public secondary schools varied from one Education District to the other. The implication of this is that there is no uniformity of standards in the promotion policy in the State public secondary schools and this jeopardizes the principles underlying examinations which are the principles of competition and advancement by merit; if a mechanism is not put in place to ensure students master the basic skills necessary for success in higher grades then this will

inevitably affect the quality of products that are churned out yearly from the public secondary schools.

- The thesis established that uniform administrative and supervisory procedures are used for the unified examinations procedures in the public secondary schools in Lagos State. The implication of this is that the unified examinations are valid and reliable in terms of administration. It equally implies that leakages of the unified examinations questions (if any) can be brought to the barest minimum.
- The study showed that the teachers exhibit uniform positive attitude to the unified examinations programme in the public secondary schools in the State. This implies that uniform assessment procedures have positive influence on the teachers' attitude to their teaching jobs and such they are more diligent and dedicated in the discharge of their duties.
- The research revealed that the school attendance patterns of the teachers are uniform in the six Education Districts in Lagos State. The implication of this is that there has been a measurable success in the Lagos State government's objective of improving teachers' attendance at school and at classes.
- The study showed that the students' school attendance patterns and attitude to the unified examinations programme varied from one Education District to the other. The implication of this is that more work still needs to be done to enlighten the students on the need to have an attitudinal change to school and schooling. It also implies that the students need more re-orientation so as to be in tune with the State Government's desire to have qualitative education at the secondary school level and to consistently improve on students performances in external examinations.

- The thesis equally revealed that the process for constructing unified examinations questions did not follow the standard process of test items construction. The implication of this is that the unified examinations test items are not standardized. Therefore there is the urgent need to have trained item writers who are qualified measurement and evaluation professionals.
- The study established that students' performances in unified chemistry examinations could not significantly predict their performances in a chemistry achievement test. This implies that the unified examinations questions lacked adequate predictive validity and as such more work still needs to be done to improve on the quality and standard of the examinations questions.

5.5 Recommendations

This study was conducted with the unified examinations programme objectives as it is stipulated in the unified examinations programme policy paper as the basis for the study. The objectives that were considered in this study are uniform scoring, promotion, administration and supervision. Rates of completion of the unified schemes of work, attitude and school attendance patterns of both teachers and students, procedure for constructing the unified examinations test items and the predictive validity of the unified examinations questions.

The researcher, having embarked on this study, therefore made a number of recommendations:

- The teachers should have adequate classroom and professional competencies so as to arouse the interest of the students in academics. This will serve to motivate students to attend classes on a regular basis and also encourage them to develop positive attitude for effective learning outcomes.
- Arbitrary promotion should be abolished in the State. Students who have not acquired the requisite minimum standard for the next academic level should be made to repeat the class.

Therefore erring schools' administrators who promote students indiscriminately should be penalized.

- There should be adequate funding of the unified examinations programme by the Lagos State Government that should cover staff training, research and development. This will in no small measure improve the quality of the unified examinations programme.
- The item writers should be well trained in the act of test items construction. The item writers should be adequately supervised to ensure that the unified examinations test items are constructed in line with the standard process guiding test items construction.
- The unified examinations programme should be channelled through the State Examinations Board with a mandate to establish a uniform standard for the construction, administration and scoring of the examinations.
- The validated instruments should serve as basis for future research in art and social science subjects.

5.6 Suggestions for further studies

As a result of the experiences of this researcher during the course of carrying out this research, the following recommendations are hereby made for further studies:

1. Future researchers should carry out similar research in the art and social science subjects so as to determine the extent of adherence to the unified examinations programme objectives in these subject areas.
2. Future researchers should conduct research on the sixth objective of the unified examinations programme in Lagos State: assessment of the provision, adequacy and usage of instructional materials in the state public secondary schools so as to determine its impact on students' academic achievement.

3. Future researchers should conduct similar research in other States that have introduced the unified examinations programme in order to determine the effectiveness of the unified examinations.
4. Research should be carried out on record keeping in the public secondary schools in Lagos State this will help detect any laxity in record keeping by the school administrators and possible remedies.

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APPENDIX ONE (1)

UNIVERSITY OF LAGOS

LAGOS STATE, NIGERIA

**PROGRAMME ASSESSMENT QUESTIONNAIRE FOR THE UNIFIED
EXAMINATIONS PERSONNEL AT THE BASIC EDUCATION SERVICES UNIT OF THE
MINISTRY OF EDUCATION [PAQ, BES VERSION]**

I am a doctoral student of the above named institution. My research interest is in the Unified Examinations in the public secondary schools in Lagos State.

For each of the following items, kindly tick the most appropriate column as honestly as possible. Please be assured that all information given will be treated with a high level of confidentiality.

SECTION A: BIO-DATA

1. Name of Department
2. Age: 21-30 years() 31-40 years() 41-50 years() 51-60 years()
3. Gender: Male() Female()
4. Highest Professional Qualification: NCE() B.Ed() PGDE/M. Ed() PhD()
5. Years of Working Experience 1-10 years() 11-20 years() 21 and above years()
6. Years of Supervising Unified Examinations 1-5 years() 6-10 years() 10 and above years()

SECTION B: STANDARD OF THE UNIFIED EXAMINATIONS QUESTIONS

S/N		YES	NO
7	The item writers have five years and above teaching experience.		
8	There are subject specialists that moderate the Unified Examination questions.		
9	The Basic Education Services unit in charge of the unified examinations at the Ministry of Education is responsible for setting the standards of the examinations questions.		
10	Too difficult and too simple questions are usually eliminated before printing.		
11	Only questions that have been certified fit for use are included in the Unified Examinations.		
12	The Unified Examination questions are usually based on the terms' scheme of work.		
13	The unified examination questions are usually drawn from the question bank.		
14	The Basic Education Services Unit is responsible for setting the standards of the scoring guides for the unified examinations questions.		
15	There have been calls to improve on the standard of the unified examinations by the stake holders.		
16	The results of the examinations are perceived as credible by all stakeholder groups.		

SECTION C: FUNDING OF THE UNIFIED EXAMINATIONS

S/N		YES	NO
17	There is regular funding all by the State Government for the unified examinations.		
	The activities covered by the funds allocated to the conduct of the unified examinations include:		
18	The unified examinations questions design.		
19	The unified examinations programme administration.		
20	Long or medium-term planning of unified examinations programme milestones.		
21	Research and development in the area of unified examinations.		

22	Training of item writers and examination officers.		
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SECTION D: PERFORMANCES OF THE HUMAN RESOURCES RESPONSIBLE FOR THE UNIFIED EXAMINATIONS.

S/N		YES	NO
23	There are adequate human resources for running the examinations.		
24	Which of the issues below have been identified with the performances of the human resources responsible for the examinations: Delays in administrating the examinations questions.		
25	Poor guidelines in administering the examinations.		
26	Frequent detection of errors in the examination questions by the unified examinations moderators.		
27	Weakness in test design		
28	Omission of curricular topics		
29	Detection of errors in scoring by the unified examinations officers.		

SECTION E: FUNCTIONS OF THE TEACHERS

S/N		YES	NO
30	What examination-related tasks are mainly performed by teachers? Writing or selecting the unified examination questions		
31	Creating marking guide for the unified examinations questions.		
32	Administering the unified examinations.		
33	Scoring of the unified examinations.		
34	Supervision of the unified examinations procedures.		

SECTION F: STATUTORY BACKING OF THE UNIFIED EXAMINATIONS

S/N		YES	NO
35	There is a policy document that authorises the unified examinations		
36	The content of the policy document authorizing the examinations explains alignment with the curricula and standards.		
37	The content of the policy document authorizing the examination explains format for the examination questions.		
38	The main purpose of the unified examinations is for monitoring education quality levels.		
39	Do the unified examinations pass through the State's Examination Board?		
40	The feedbacks of the unified examinations are monitored by expert review groups.		

APPENDIX TWO (2)

UNIVERSITY OF LAGOS, LAGOS STATE, NIGERIA

ADMINISTRATION AND SUPERVISION QUESTIONNAIRE [ASUEQ]

For each of the following items, kindly tick the most appropriate column as honestly as possible.

Please be assured that all information given will be treated with a high level of confidentiality.

SECTION A: BIO-DATA

- 7. Name of School
- 8. Age: 21-30 years() 31-40 years() 41-50 years() 51-60 years()
- 9. Gender: Male() Female()
- 10. Highest Professional Qualification: NCE() B.Ed() PGDE/M. Ed() PhD()
- 11. Years of Qualification/Work Experience 1-10 years() 11-20 years() 21 and above years()
- 12. Years of Supervising Unified Examinations 1-5 years() 6-10 years() 10 and above years()

SECTION B: ADMINISTRATION OF THE UNIFIED EXAMINATIONS:

Please rate the administration of the unified examinations by ticking the appropriate column for each of the items below.

S/N		All the time	Most of the time	On few occasions	Never
7	The unified examination questions are usually promptly distributed to the schools.				
8	Issues of late arrival of materials to the schools are taken seriously.				
9	The examination questions are usually tamper proof.				
10	The Ministry of Education personnel co-ordinate the District personnel for adequate monitoring of the Unified Examination.				
11	The Education Zones have personnel dedicated to the monitoring of the examinations in all the schools.				
12	Issues of late starting of examinations in any school is usually addressed and corrected.				
13	As much as possible the unified examinations hold at all schools' centres simultaneously.				

SECTION C: SUPERVISION OF THE UNIFIED EXAMINATIONS: Please rate the supervision of the Unified Examinations by ticking the appropriate column for each of the items below.

S/N		All the time	Most of the time	On few occasions	Never
14	The unified examinations are usually adequately supervised.				
15	The District personnel coordinate school personnel for				

	adequate supervision of the unified examinations.				
16	Report on the conduct of the unified examinations receives utmost attention.				
17	Cases of misconduct of supervisors are usually investigated.				
18	Reported cases of examination malpractices are usually dealt with.				
19	The examination papers are usually tamper proof.				
20	Students who engage in examination malpractices are usually punished.				

APPENDIX THREE (3)

UNIVERSITY OF LAGOS

LAGOS STATE, NIGERIA

PROGRAMME ASSESSMENT QUESTIONNAIRE [PAQ, TEACHERS' VERSION]

I am a doctoral student of the above named institution. My research interest is in Unified Examinations in the public secondary schools in Lagos State.

For each of the following items, kindly tick the most appropriate column as honestly as possible. Please be assured that all information given will be treated with a high level of confidentiality.

SECTION A: BIO-DATA

1. Age: 21-30 years() 31-40 years() 41-50 years() 51-60 years()
2. Gender: Male() Female()
3. Highest Professional Qualification: NCE() B.Ed() PGDE/M. Ed() PhD()
4. Years of Qualification/Work Experience 1-10 years() 11-20 years() 21 and above years()
5. Years of Supervising Unified Examinations 1-5 years() 6-10 years() 10 and above years()

SECTION B: UNIFORM SCORING CRITERIA [SCIENCE TEACHER]

Please indicate the level of uniformity in the assessment procedures in your school.

S/N		Always	Sometimes	Rarely	Never
6	The unified examinations officers ensure that uniform scoring criteria are utilized in all the secondary schools for scoring the unified Examination answer scripts in all the subjects.				
7	The unified examinations officers ensure that the subjects answer scripts are exchanged between schools for marking.				
8	The teachers usually engage in conference marking of the unified examinations scripts.				
9	Provision of adequate marking guide is one of the major successes of the Unified Examination programme.				
10	Erring schools that do not use conference marking are usually penalized.				
11	A monitoring team ensures that the subject teachers use conference marking for marking the answer scripts.				
12	Availability of marking guide for all the subjects guarantees uniformity of the scoring process.				

SECTION C: UNIFORM PROMOTION CRITERIA

Please indicate the level of uniformity in the assessment procedures in your school.

S/N		Always	Sometimes	Rarely	Never
13	Uniform promotion criteria are not strictly adhered to in the school.				
14	The school management use their discretion occasionally to promote some students.				
15	Students are given automatic promotion to prevent them from dropping out of school.				
16	Students' continuous assessment scores are considered in the promotion process.				
17	Before a student can be considered for promotion he/she must have attended school on a regular basis.				
18	Failure to adhere to the laid down promotion criteria attracts penalty from the authority.				
19	Students who have less than fifty percent overall average scores are made to repeat the class.				

SECTION D: TEACHERS' ATTITUDE TO THE UNIFIED EXAMINATIONS:

For each of the following items, kindly tick the most appropriate column as honestly as possible; SD (Strongly Agree), A(Agree), D(Disagree) and SD (Strongly Disagree)

S/N		SA	A	D	SD
20	I am indifferent to the students' performance outcomes in the unified Examination because the students are not serious.				
21	The unified examinations programme is very stressful.				
22	The large numbers of examination answer scripts make thorough marking difficult.				
23	Students have a non-chalant attitude to the examinations.				
24	Students' continued poor performances in internal and external examinations affect my attitude to the unified examinations programme.				
25	The unified examinations questions do not measure up to standard.				
26	The way and manner the Unified Examination is conducted makes me less enthusiastic about the programme.				
27	The unified examinations programme makes me more thorough in my teaching.				
28	Completing the chemistry subject's schemes can be quite tasking.				
29	The Unified Examination programme ensures the subjects syllabi are completed before the examinations.				

SECTION E: STUDENTS' ATTENDANCE PATTERNS: [SS2 SCIENCE CLASS TEACHER]

For each of the following items, kindly tick the most appropriate column as honestly as possible

S/N		Very Regular	Regular	Irregular	Very Irregular
30	Attendance at school.				
31	Punctuality to school.				
32	Attendance at assembly.				
33	Attendance at classes.				
34	Attendance at extracurricular activities.				
35	Attendance at examinations.				

APPENDIX FOUR (4)

UNIVERSITY OF LAGOS

LAGOS STATE, NIGERIA

**TEACHERS ASSESSMENT QUESTIONNAIRE [TAQ, TO BE COMPLETED BY THE
H.O.D. SCIENCE]**

I am a doctoral student of the above named institution. My research interest is in Unified Examinations in the public secondary schools in Lagos State.

For each of the following items, kindly tick the most appropriate column as honestly as possible.

Please be assured that all information given will be treated with a high level of confidentiality.

SECTION A: BIO-DATA

1. Age: 21-30 years() 31-40 years() 41-50 years() 51-60 years()
2. Gender: Male() Female()
3. Highest Professional Qualification: NCE() B.Ed() PGDE/M. Ed() PhD()
4. Years of Qualification/Work Experience 1-10 years() 11-20 years() 21 and above years()

SECTION B: TEACHERS' ATTENDANCE PATTERN:

S/N		Very Regular	Regular	Irregular	Very Irregular
5	Attendance at school.				
6	Attendance at morning assembly.				
7	Attendance at staff meetings.				
8	Attendance at PTA meetings.				
9	Attendance at classes				
10	Attendance at invigilation.				

SECTION C: FREQUENCY OF COMPLETION OF THE CHEMISTRY SCHEME OF WORK: Please indicate the level of completion of the Chemistry Scheme of work by the teacher

S/N		Always	Sometimes	Rarely	Never
11	The subject scheme of work agrees with the Lagos State unified scheme of work.				
12	Lesson note agrees with the unified scheme of work in the diary.				
13	Topics in the lesson note agree with the topics taught in the students' notebook.				
14	Lesson for the week is being taught.				
15	Lesson is based on lesson note.				

APPENDIX FIVE (5)

UNIVERSITY OF LAGOS

LAGOS STATE, NIGERIA

STUDENTS' ATTITUDE TO THE UNIFIED EXAMINATIONS QUESTIONNAIRE

[SAUEQ]

I am a doctoral student of the above named institution. My research interest is in Unified Examinations in the public secondary schools in Lagos State.

For each of the following items, kindly tick the most appropriate column as honestly as possible.

Please be assured that all information given will be treated with a high level of confidentiality.

SECTION A: BIO-DATA

1. Name of School
2. Age: 14 - 16 years() 17 – 19 years() others ()
3. Gender: Male() Female()
4. Best Science Subject: Physics () Chemistry () Biology ()

SECTION B: STUDENTS' ATTITUDE TO THE UNIFIED EXAMINATIONS

For each of the following items, kindly tick the most appropriate column as honestly as possible;

SA (Strongly Agree), A(Agree), D(Disagree) and SD (Strongly Disagree)

S/N		SA	A	D	SD
5	The Unified Examinations makes teachers regular in classes				
6	The Unified Examination is helping me take my academics more seriously.				
7	I am taking my studies seriously so that I can be promoted to the next class.				
8	The Unified Examinations is making me attend school compulsorily				
9	The unified examinations are making it possible for the teachers to assess the students in an unbiased manner.				
10	I find the unified examinations to be very beneficial to me.				

APPENDIX 6

CHEMISTRY ACHIEVEMENT TEST (CAT)

INSTRUCTION: ANSWER ALL THE QUESTIONS. EACH QUESTION CARRY EQUAL MARKS CHOOSE THE MOST SUITABLE ANSWER FROM THE OPTIONS GIVEN

- The periodic classification of the elements is an arrangement of the elements in order of their _____
 A. atomic masses B. atomic numbers C. ionic masses D. isotopic masses
 E. molecular masses
- An element with the electronic configuration $1s^2 2s^2 2p^6 3s^2 3p^2$ belongs to group _____
 A. II B. III C. IV D. VI E. VII
- Which of the following periodic trend is correct?
 A. atomic size decreases down the group
 B. atomic size increases across the period
 C. electronegativity decreases down the group
 D. electronegativity increases down the group
 E. ionic potential decreases along the period
- Which of the following statement is not correct? Group 7 elements
 A. are diatomic
 B. are good oxidizing agents
 C. are highly electronegative
 D. have relatively low ionization potentials
 E. have high electron affinity
- In the redox reaction represented by the following equation: $Cu^{2+} + Zn_{(s)} \longrightarrow Cu_{(s)} + Zn^{2n}$
 A. the oxidation number of copper increases
 B. copper (II) ions donate electrons to zinc atoms
 C. zinc atoms are reduced to zinc atoms
 D. copper (II) ions donate electrons to zinc atoms
 E. both the copper and zinc atoms are reduced
- In the reaction represented by the following equation, $2H_2S_{(g)} + SO_{2(g)} \longrightarrow 2H_2O_{(l)} + 3S_{(s)}$ SO₂ is acting as
 A. a reducing agent B. an oxidizing agent C. a dehydrating agent
 D. a bleaching agent E. a precipitating agent
- What is the change in the oxidation number of phosphorus in the reaction represented by the following equation? $4P_{(s)} + 5O_{2(g)} \longrightarrow 2P_2O_5$
 A. 0 to +2 B. 0 to +5
 C. +4 to +2 D. +4 to +5 E. +4 to +7
- When iron rusts, it undergoes
 A. deliquescence B. chemical decomposition
 C. hydrolysis D. redox reaction E. combustion
- Which of the following statement is not correct about electrolysis?
 A. reduction occurs at the anode B. anions migrate to the anode
 C. positive ions migrate to the cathode D. concentration affects the discharge of ions
 E. electrolytes conduct electric current
- Which of the following will produce oxygen and hydrogen during its electrolysis using platinum electrode?
 A. glucose solution B. aqueous copper (II) tetraoxosulphate (IV)
 C. dilute sodium chloride solution D. concentrated hydrochloric acid
 E. dilute copper (II) chloride solution

11. When dilute copper (II) chloride solution is electrolyzed, the reaction at the cathode is represented by the equation: $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$
- A. $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$ B. $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ C. $4\text{OH}^- - 4\text{e}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O}$ D. $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$
12. The products of the electrolysis of dilute sodium chloride with platinum electrodes are
 A. hydrogen and oxygen B. oxygen & chlorine C. chlorine & water
 D. sodium amalgam & chlorine E. sodium hydroxide & water
13. A current of 4.0 Amperes was passed through copper (ii) tetraoxosulphate (vii) solution for one hour using copper electrodes. What was the mass of copper deposited? [Cu = 64. If = 96500C]
 A. 3.2g B. 4.8g C. 6.4g
 D. 48g E. 96g
14. The reaction represented by the equation: $\text{NaOH}_{(\text{aq})} + \text{HCl}_{(\text{aq})} \rightarrow \text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}(\text{l})$
 A. Is a double decomposition reaction B. is a neutralization C. is reversible
 D. is usually catalyzed E. attains equilibrium after a few seconds
15. Which of the following statements about an exothermic reaction is correct?
 A. the product has less heat content than the reactants
 B. the system absorbs heat from the surrounding C. the activation energy is high
 D. the enthalpy change is positive
16. Which of the following equation represents a substitution reaction?
 A. $\text{C}_4\text{H}_{10}(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow \text{C}_2\text{H}_5\text{Cl}(\text{g}) + \text{HCl}(\text{g})$ B. $\text{C}_2\text{H}_4(\text{g}) + \text{HCl}(\text{g}) \rightarrow \text{C}_2\text{H}_5\text{Cl}(\text{l})$
 C. $\text{C}_2\text{H}_2(\text{g}) + 2\text{H}_2(\text{g}) \rightarrow \text{C}_2\text{H}_6(\text{g})$ D. $\text{C}_3\text{H}_4(\text{g}) + 4\text{O}_2(\text{g}) \rightarrow 3\text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$
17. Consider the neutralization reaction represented by the following equation:
 $\text{Na}_2\text{CO}_3 + 2\text{HNO}_3 \rightarrow 2\text{NaNO}_3 + \text{H}_2\text{O} + \text{CO}_2$
 The stoichiometric ratio of acid to base is A. 2:2 B. 2:1 C. 1:2 D. 1:1
18. The rate of reaction is proportional to the number of effective collisions occurring per second between the reactants. This statement is associated with the:
 A. kinetic theory B. rate law
 C. atomic theory D. collision theory E. gas laws
19. The oxidation number of chlorine is +1 in A. KClO_3 B. Cl_2O_7
 C. ZnCl_2 D. HCl E. NaClO
20. If 3 mole of electrons are required to deposit 1 mole of a metal M during the electrolysis of its molten chloride, the empirical formula of the metallic chloride is A. M_3Cl B. M_3Cl_2
 C. MCl D. M_2Cl_3 E. MCl_3
21. In which of the following is the oxidation number of nitrogen zero? A. NH_3
 B. NaNO_3 C. HNO_2 D. N_2 E. NOI_3

In the reaction represented by the equation above, the function of MnO_2 is to

- A. increase the surface area of the reactants
B. increase the concentration of the oxygen compounds present
C. increase the change in free energy of the system
D. decrease the activation energy of the process
E. decrease the surface area of the products
22. Consider the reaction represented by the equation below: $\text{H}_{2(g)} + \text{I}_{2(g)} \rightarrow 2\text{HI}_{(g)}$ Which of the following takes place when the temperature of the reaction vessel is decreased?
A. the gases condense B. the yield of hydrogen increases
C. the concentration of the reactants remain constant
D. more of the hydrogen iodide decomposes E. the yield of hydrogen iodide increases
23. Study carefully the reaction represented by the equation below. $2\text{H}_2\text{O}_{2(l)} \rightarrow \text{O}_{2(g)} + 2\text{H}_2\text{O}_{(l)}$ Which of following will not increase the reaction rate?
A. heating the hydrogen peroxide
B. adding a pinch of MnO_2 to the reactant C. increasing the concentration of the H_2O_2
D. adding water to the reactant E. exposing the reactant to sunlight
24. Which of the following processes is a physical reaction?
A. Electrolysis
B. Hydrolysis C. Allotropic change D. Neutralization E. Corrosion
25. The following acids are monobasic except
A. methanoic acid B. dioxonitrate III acid
C. ethanedioic acid D. oxochlorate (I) acid E. hydrobromic acid
26. The reactions of ethyne are mainly
A. substitution reactions B. addition reactions
C. addition polymerization D. catalytic hydrogenation E. catalytic halogenations
27. What is the quantity of electricity produced when a current of 0.5A is passed for 5 hours 45 mins?
A. (IF = 96500C) A. 0.11F B. 0.12F C. 0.22F D. 1.1F E. 2.2F
28. In the reaction represented by the following equation, $2\text{H}_2\text{S}_{(g)} + \text{SO}_{2(g)} \rightarrow 2\text{H}_2\text{O}_{(l)} + 3\text{S}_{(g)}$ SO_2 is acting as
A. a reducing agent B. an oxidizing agent C. a dehydrating agent
D. a bleaching agent E. precipitating agent
29. What is the number of oxygen atoms in 32g of the gas? ($O = 16 \text{ g mol}^{-1}$)
A. 3.2×10^{23} B. 6.0×10^{23} C. 1.2×10^{24} D. 1.6×10^{24} E. 2.0×10^{24}
30. Which of the following observations is not correct about the reaction of sodium metal with cold water?
A. The reaction is spontaneous B. The reaction is endothermic C. Hydrogen is produced
D. The sodium melts and dissolves E. The resultant solution is alkaline

31. If a reaction is said to be exothermic, which of the following statement is a correct deduction from the information? A. The reaction vessel gets hotter as the reaction proceeds B. ΔH for the reaction is positive C. The rate of the reaction increases with time D. The activation energy of the reaction is high
32. Which of the following pH values is likely to be that of a slightly alkaline solution?
A. 2 B. 5 C. 7 D. 8 E. 6
33. What is the value of n in the following equation? $\text{XO}_4^- + 8\text{H}^+ + ne \longrightarrow \text{X}^{2+} + 4\text{H}_2\text{O}$
A. 2 B. 3 C. 4 D. 5 E. 6
34. Which of the following accounts for the difference in the mode of conduction of electricity by metals and aqueous salt solutions?
A. Electrons are present in metals but not in salt solutions
B. Metals are conductors while salts are electrolytes C. Electricity is carried by mobile electrons in metals but by ions in aqueous salt solution D. Salts ionize in aqueous solutions while metals do not E. Metals are reducing agents while salts are not
35. What amount of copper will be deposited if a current of 10A was passed through a solution of copper (II) salt for 965 seconds? ($1F = 96500 \text{ C}$)
A. 0.005 mole B. 0.025 mole
C. 0.05 mole D. 100 mole E. 1.05 mole
36. Which of the following substances is a peroxide? A. Na_2O_2 B. CuO C. Pb_3O_4
D. Fe_2O_3 E. Al_2O_3
37. The number of replaceable hydrogen atoms in one molecule of an acid indicates it's
A. basicity B. acidity C. alkalinity D. reactivity E. pH value
38. In any chemical reaction, the total mass of the products is always equal to that of the reactants. This is statement of the law of
A. definite proportion B. conservation of matter
C. multiple proportions D. reciprocal proportions E. constant composition
39. How many faradays of electricity are required to liberate 9g of aluminium? ($\text{Al} = 27$)
A. 0.1 B. 0.3 C. 1.0 D. 2.7 E. 3.0
40. In chemical reaction, the reacting species possess energy of motion known as
A. potential energy
B. free energy C. bond energy D. kinetic energy E. hydration energy
41. What is the role of hydrogen sulphide gas in the reaction represented by the following equation?
 $\text{H}_2\text{SO}_{4(\text{aq})} + 3\text{H}_2\text{S}_{(\text{g})} \longrightarrow 4\text{S}_{(\text{s})} + 4\text{H}_2\text{O}_{(\text{l})}$
A. reducing agent B. a bleaching agent
C. a dehydrating agent D. a sulphonating agent E. an oxidizing agent
42. If an element X with electronic configuration 2,8,3 combines with another element Z with electronic configuration 2,8,6, the compound formed will have formula
A. XZ
B. XZ_2
C. X_2Z D. X_2Z_3 E. X_3Z_2

43. A weak acid is one which A. is not corrosive B. is slightly ionized in water C. does not produce salts with alkalis D. does not conduct an electric current in aqueous solution E. forms acid salts with bases
44. Consider the reaction represented by the equation below: $XO + YO \rightarrow X + YO_2$. In the reaction, YO acts as A. an acidic oxide B. a basic oxide C. a reducing agent D. a weak base E. an oxidizing agent
45. Sodium chloride cannot conduct electricity in the solid state because it A. is a normal salt B. is highly soluble in water C. is an electrovalent compound D. does not have any effect on litmus E. does not contain mobile ions
46. What mass of copper will be deposited by the liberation of Cu^{2+} when 0.1F of electricity flows through an aqueous solution of a copper (II) salt? [Cu = 64] A. 64g B. 32g C. 12.8g D. 6.4g E. 3.2g
47. Aqueous sodium trioxocarbonate(IV) solution is alkaline because the salt is A. is hydrolysed in water B. formed from a strong base C. fully ionized in water D. not decomposed by heat E. a strong electrolyte
48. The following salts dissolve readily in cold water except A. $CaCl_2$ B. $PhSO_4$ C. $(NH_4)_2SO_4$ D. Na_2CO_3 E. Na_2SO_3
49. Which of the following compounds is not decomposed by heat? A. Sodium trioxocarbonate(IV) B. Ammonium trioxocarbonate(IV) C. Sodium hydrogen trioxocarbonate(IV) D. Calcium trioxocarbonate(IV) E. Calcium hydrogentrioxocarbonate(IV)
50. Which of the following oxides is amphoteric? A. Na_2O B. Fe_2O_3 C. Al_2O_3 D. CaO E. CuO
51. Chlorine is prepared on a large scale by the A. electrolysis of concentrated sodium chloride solution B. action of manganese(IV) acid on hot concentrated hydrochloric acid C. action of concentrated tetraoxosulphate(VI) acid on sodium chloride D. oxidation of concentrated hydrochloric acid with potassium tetroxomanganate (VII) E. action of dilute mineral acids on bleaching powder
52. When an atom gains an electron, it becomes A. chemically inactive B. negatively charged C. oxidized D. a cation E. a complex ion
53. A solution of pH7 is A. acidic B. neutral C. concentrated D. dilute E. saturated
54. Which of the following equations represents a neutralization reaction?
 A. $CaCl_2 + 2HCl \rightarrow Cl_2 + CaCl_2 + H_2O$ B. $Na_2O_2 + H_2SO_4 \rightarrow Na_2SO_4 + H_2O_2$

- C. $\text{H}_2\text{SO}_4 + \text{KOH} \longrightarrow \text{KHSO}_4 + \text{H}_2\text{O}$ D. $2\text{Na} + 2\text{H}_2\text{O} \longrightarrow 2\text{NaOH} + \text{H}_2$
 E. $\text{CuSO}_4 + 2\text{NaOH} \longrightarrow \text{Cu(OH)}_2 + \text{Na}_2\text{SO}_4$
55. The following acids are monobasic except A. trioxonitrate(V) acid B. hydrochloric acid
 C. ethanoic acid D. tetraoxophosphorus (V) acid E. dioxonitrate (III) acid
56. In which of the following compounds is the oxidation number of nitrogen equal to +3?
 A. NO_2 B. N_2O C. NO D. HNO_2 E. HNO_3
57. Which of the following statements is not correct about electrolysis? A. Reduction occurs at the anode
 B. Anions migrate to the anode C. Positive ions migrate to the cathode
 D. Concentration affects the discharge of ions E. Electrolytes conduct electric current
58. Which of the following is not correct about a catalyst? It A. remains unchanged chemically at the end of a reaction B. helps to establish equilibrium faster reversible reaction
 C. can start a chemical reaction which will normally not take place D. is usually specific in its action
 E. alters the rate of chemical reactions.
59. What does x represent in the following equation? $\text{H}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g}) \longrightarrow \text{H}_2\text{O}(\text{l})$ $H = x\text{kJ}$
 A. Bond energy B. Activation energy C. Ionization energy D. Enthalpy of neutralization
 E. Enthalpy of formation
60. What is the role of MnO_2 in the reaction represented by the following equation?
 $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$ A. Bleaching agent B. Oxidizing agent
 C. Amphoteric oxide D. Basic oxide E. Catalyst

APPENDIX 7
UNIFIED EXAMINATIONS CHEMISTRY QUESTIONS (UECQ)

INSTRUCTION: ANSWER ALL THE QUESTIONS. EACH QUESTION CARRY EQUAL MARKS CHOOSE THE MOST SUITABLE ANSWER FROM THE OPTIONS GIVEN

- In the reaction below, the arrow \rightleftharpoons indicates that the reaction $\text{N}_2\text{O}_4 \rightleftharpoons 2\text{NO}_2$ is
A. reversible B. irreversible C. endothermic D. exothermic
- In the electrolysis of brine, the anode must be carbon because A. carbon is a reducing agent
B. chlorine does not reduce agent C. carbon produces the discharge of chlorine
D. chlorine attacks other elements but not carbon
- In the periodic table, elements are arranged according to their A. atomic masses
B. mass numbers C. atomic number D. valency electron
- Elements in the same group in the periodic table have the same A. number of valency electrons
B. number of shells C. atomic number D. electronic configuration
- The oxidation number of the underlined atom in the compound H_2SO_4 is
A. +6 B. -3 C. +4 D. -5
- How many electrons are removed from Cr^{2+} when it is oxidized to CrO_4^{2-} ? A. 70 B. 2 C. 4 D. -5
- What quantity of silver is deposited when 96500C of electricity is passed through a solution containing silver ions ($A_g = 108, 1F = 96500\text{C}$) A. 1.8g B. 540g C. 10.8g D. 21.6g
- Consider the reaction represented by the equation: $\text{Ca}(\text{OH})_{2(\text{aq})} + \text{CO}_{2(\text{g})} \rightarrow \text{CaCO}_{3(\text{s})} + \text{H}_2\text{O}_{(\text{l})}$ in the reaction above, CO_2 , acts as A. an acidic oxide B. an oxidizing agent C. a basic oxide
D. a dehydrating agent
- Which of the following factors will affect the rate of formation of $\text{S}_{(\text{s})}$ in the reaction represented by the equation below? $\text{S}_2\text{O}_3^{2-}{}_{(\text{aq})} + 2\text{H}^+{}_{(\text{aq})} \rightarrow \text{SO}_{2(\text{g})} + \text{H}_2\text{O}_{(\text{l})} + \text{S}_{(\text{s})}$ A. Increase in temperature
B. Increase in pressure C. Removal of $\text{H}_2\text{O}_{(\text{l})}$ D. Use of a catalyst
- The reaction represented by the $\text{NaOH}_{(\text{aq})} + \text{HCl}_{(\text{aq})} \rightarrow \text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
A. is a double decomposition B. is a neutralization C. is reversible D. is usually catalyzed
- The atomic mass of an atom is mostly due to the mass of A. electron and proton
B. electron and neutron C. proton and neutron D. atomic number and proton
- Which of the following statement is not correct of group 7 elements? A. are diatomic B. are good oxidizing agents C. have high relatively low ionization potential D. have high electron affinity
- What is the value of "n" in the following redox reaction $\text{XO}_4 + 8\text{H}^+ + ne \rightarrow \text{X}_2^{2+} + 4\text{H}_2\text{O}$?

- A. 2 B. 3 C. 4 D. 5
14. The following elements are transition elements except
 A. Chromium
 B. Cobalt C. Boron D. Nickel
15. Which of the following does not affect the discharge of ions during electrolysis?
 A. position of ions
 in the electro-chemical series B. concentration of ions C. nature of electrode
 D. temperature of solution
16. In the reaction below, $2\text{SO}_{2(g)} + \text{O}_{2(g)} \rightleftharpoons 2\text{SO}_{3(g)}$ $\Delta H = +395.71\text{g}$, the forward reaction is
 A. exothermic B. endothermic C. closed D. constant
17. The oxidation number of the underlined atom in the compound HNO_3 is
 A. +3 B. +5 C. +4 D. +6
18. The value for "X" in the following redox equation $\text{Cu}^{2+} + \text{Xe} \longrightarrow \text{Cu}$ is
 A. 3 B. 2 C. 1 D. +2
19. The loss of molecules of water of crystallization to the atmosphere by some crystalline salts is known as
 A. efflorescence B. effervescence C. phosphorescence D. fluorescence
 E. deliquescence
20. What is the value of x in the following equation? $\text{MnO}_4 + 4\text{H}^+ + \text{x e}^- \longrightarrow \text{MnO}_2 + 2\text{H}_2\text{O}$
 A. 2 B. 3 C. 4 D. 7 E. 8
21. What is the basicity of the acid in the following reaction?
 $\text{NaCO}_3 + 2\text{CH}_3\text{COOH} \longrightarrow \text{NaCO}_3 + 2\text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$
 A. 1 B. 2 C. 3 D. 4 E. 8
22. What mass of copper would be deposited by a current of 1.0 ampere passing for 969 seconds through copper (II) tetraoxosulphate (VI) solution? [Cu = 63.5; 1F = 96500C]
 A. 0.318g B. 0.635g C. 3.18g D. 6.35g E. 9.65g
23. How many electrons are removed from Cr^{2+} when it is oxidized to CrO_4^{2-} ?
 A. 0 B. 2 C. 4 D. 8 E. 10
24. Rusting of iron is an example of
 A. deliquescence B. decomposition
 C. displacement reaction D. redox reaction E. reversible reaction
25. In the Periodic Table, the elements that lose electrons most readily belong to
 A. Group IA
 B. Group IIA C. Group IIIA D. Group VIIA
26. Which of the following is an acid salt?
 A. NH_4Cl B. $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
 C. CH_3COONa D. NaHCO_3
27. Which of the following lowers the activate energy of a chemical reaction?
 A. freezing mixture
 B. reducing agent C. water D. catalyst
28. Consider the reaction represented by the following equation: $\text{H}_{2(g)} + \text{I}_{2(g)} \longrightarrow 2\text{HI}_{(g)}$. The number of effective collisions of molecules of the reactants decreases as
 A. the temperature is raised
 B. the pressure increased C. the volume of the system is increased

- D. a catalyst is introduced into the system
29. Which of the following is not correct about oxidation number convention? The oxidation number of a/an A. element in the free state is zero B. monatomic iron is equal to its charge C. alkali metal like sodium in its compounds is +1 D. atom of a diatomic molecule is +2
30. When dilute copper (II) chloride solution is electrolysed, the reaction at the cathode is represented by the equation: A. $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$ B. $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ C. $4\text{OH}^- - 4\text{e}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O}$ D. $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$
31. The gas evolved when dilute tetraoxosulphate(VI) acid reacts with sodium hydrogen trioxocarbonate(IV) is A. hydrogen B. oxygen C. carbon(IV) oxide D. sulphur(VI) oxide
32. Which of the following is an acid salt? A. $(\text{NH}_4)_2\text{CO}_3$ B. CH_3COONa C. KHSO_4 D. $\text{MgSO}_3 \cdot 7\text{H}_2\text{O}$
33. If a solution has a pH of 2, it can be concluded that it A. is a weak electrolyte B. has hydrogen ion concentration of 0.2 mol dm^{-3} C. is twice as acidic as a solution of pH1 D. will produce effervescence with magnesium ribbon
34. Which of the following compounds dissolves in water to give an alkaline solution? A. Ammonium chloride B. Sodium chloride C. Sulphur(IV) oxide D. Potassium oxide
35. What type of reaction is involved when wood shavings produce a brown gas with concentrated HNO_3 ? A. redox reaction B. destructive distillation C. dehydration D. neutralization
36. Which of the following will displace copper from a solution of copper (II) salt? A. Aluminium ions B. Magnesium C. Silver D. Zinc ions
37. What is the value of x in the following equation? $\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + \text{x e}^- \rightarrow 2\text{Cr}^{3+} + 7\text{H}_2\text{O}$ A. 1 B. 6 C. 8 D. 12
38. In which of the following is the oxidation number of sulphur equal to -2? A. S_8 B. H_2S C. SO_2 D. SO_3^{2-}
39. An iron nail placed in a solution of copper (II) tetraoxosulphate(VI) is soon covered with a deposit of copper. Which of the following equations represents the reactions?
 A. $\text{Fe}^{2+}_{(\text{aq})} + \text{Cu}_{(\text{s})} \rightarrow \text{Fe}^{3+} + \text{Cu}^{2+}_{(\text{aq})}$ B. $\text{Fe}^{2+}_{(\text{aq})} + \text{Cu}_{(\text{s})} \rightarrow \text{Fe}_{(\text{s})} + \text{Cu}^{2+}_{(\text{aq})}$
 C. $\text{Fe}_{(\text{s})} + \text{Cu}^{2+}_{(\text{aq})} \rightarrow \text{Fe}^{2+}_{(\text{aq})} + \text{Cu}_{(\text{s})}$ D. $\text{Fe}_{(\text{s})} + \text{Cu}^{2+} \rightarrow \text{Fe}^{2+}_{(\text{aq})} + \text{Cu}_{(\text{s})}$
40. 0.10 mol dm^{-3} NaCl conducts electricity better than 0.10 mol dm^{-3} CH_3COOH because the solution of NaCl A. contains more ions B. is neutral to litmus C. has a lower molar mass D. has a higher pH
41. Which of the following occurs when a solution of CuSO_4 is electrolyzed using copper electrodes?
 A. The cathode becomes coated with copper B. Both electrodes gain electrons
 C. The blue colour of the solution fades gradually D. The anode increases in mass

42. The atom of an element X has n electrons in its outermost shell. What is the formula of the compound formed when X combines with aluminium (${}_{13}\text{Al}$)? A. AlX_2 B. Al_2X C. Al_2X_2 D. Al_2X_3
43. In which of the reactions represented by the following equations is HNO_3 behaving as a typical acid?
 A. $\text{CaO} + 2\text{HNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$ B. $\text{Cu} + 4\text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{H}_2\text{O} + 2\text{NO}_2$
 C. $\text{S} + 6\text{HNO}_3 \rightarrow \text{H}_2\text{SO}_4 + 6\text{NO}_2 + 2\text{H}_2\text{O}$ D. $\text{P} + 5\text{HNO}_3 \rightarrow \text{H}_3\text{PO}_4 + 5\text{NO}_2 + \text{H}_2\text{O}$
44. $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ can be obtained from an aqueous solution of copper (II) tetraoxosulphate(VI) by
 A. evaporation to dryness B. using chromatography C. precipitation D. crystallization
45. Consider the following equation: $\text{Cr}_2\text{O}_7^{2-}(\text{aq}) + 14\text{H}^+(\text{aq}) + 6\text{e}^- \rightarrow 2\text{Cr}^{3+}(\text{aq}) + 6\text{e}^- \rightarrow 2\text{Cr}^{3+}(\text{aq}) + 7\text{H}_2\text{O}(\text{l})$. The oxidation number of chromium changes from
 A. -2 to +3 B. -2 to +6 C. +6 to +3 D. +7 to +6
46. Which of the following ions require the largest quantity of electricity for discharge at an electrode?
 A. 2.0 mole of Q^{3+} B. 2.5 mole of R^{2+} C. 3.0 mole of T D. 4.0 mole of Y
47. When concentrated sodium chloride solution is electrolyzed using inert electrodes, the products are
 A. oxygen and hydrogen B. hydrogen and chlorine
 C. sodium and oxygen D. sodium and chlorine
48. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^3$. Where is the element located in the periodic table?
 A. Group III, period 3 B. Group III, period 5 C. Group V, period 3
 D. Group V, period 5
49. Group 0 elements are unreactive because
 A. their outermost shells contain equal number of electrons
 B. their highest occupied energy level is full C. they are monatomic gases
 D. they are non-metals.
50. What term is used to describe an oxide whose aqueous solution turns blue litmus red?
 A. strong electrolyte B. acid anhydride C. amphoteric oxide D. basic oxide
51. What quantity of electrons in moles is needed to discharge two moles of aluminum from aluminium oxide (Al_2O_3)? A. 1 B. 2 C. 4 D. 6
52. Which of the following pairs of acid and base will produce a solution with pH less than 7 at equivalence point?
 A. HNO_3 and NaOH B. H_2SO_4 and KOH
 C. HCl and $\text{Mg}(\text{OH})_2$ D. HNO_3 and KOH
53. Which of the following statements is true of an endothermic reaction?
 i. Heat is absorbed from the surrounding
 ii. The heat content of the products is more than that of the reactants
 iii. The enthalpy change is positive
 iv. The surrounding is at a lower temperature than the system
 A. I only
 B. I and II only C. I, II and III only D. I, II, III and IV

54. What is the change in the oxidation number of I in the reaction represented by the following equation? $5\text{I}^{-1}_{(\text{aq})} + 6\text{H}^{+}_{(\text{aq})} \rightarrow 3\text{I}_{2(\text{g})} + 3\text{H}_2\text{O}(\text{l})$ A. -5 to -3 B. -1 to 0 C. +5 to +3 D. -1 to +2
55. The electronic configuration of an element X is $1s^2 2s^2 2p^6 3s^2 3p^4$. It can be deduced that X
 A. belongs to group 6 of the Periodic Table B. belongs to period IV of the Periodic Table
 C. has 3 unpaired electrons in its atom D. has relative molecular mass of 16
56. What is the mass number of an element having 20 neutrons, 15 protons and 15 electrons?
 A. 15 B. 30 C. 35 D. 50
57. An element X has an atomic number of 16. What is its most likely oxidation state in its binary compounds? A. -3 B. -2 C. +2 D. +4
58. The activation energy of a reaction can be altered by
 A. adding a reducing agent
 B. applying a high pressure C. using a catalyst D. changing the temperature
59. Which of the following factors does not affect the rate of reaction of CaCO_3 with HCl?
 A. A temperature of the reaction B. Solubility of the CaCO_3 C. Concentration of the HCl
 D. Surface area of the CaCO_3
60. Which of the following is not an acid anhydride? A. P_2O_5 B. NO_2 C. SO_2 D. CO