



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF EDUCATION

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION
(SCIENCE)

3RD YEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR

REGULAR PROGRAMME

MAIN CAMPUS

COURSE CODE: ECT 333

COURSE TITLE: SPECIAL METHODS OF TEACHING CHEMISTRY

EXAM VENUE:

STREAM: B.ED. (SCIENCE)

DATE:

EXAM SESSION:

TIME: 2 HOURS

INSTRUCTIONS

1. Answer question ONE (compulsory) and any other TWO questions.
2. Candidates are advised not to write on the question paper.
3. Candidates must hand in their answer booklets to the invigilator while in the examination room.

QUESTION ONE

- a) Describe what inquiry based learning entails. (4 mks)
- b) Discuss the three levels of inquiry based learning in Chemistry. (3 mks)
- c) Design a 5E model to illustrate on the topic salts, specifically test for the presence of cations and ions; A student was given two salts A and B and was required to carry out tests to identify the salts. (8 mks)
- d) At Rafiki Secondary School, there are three teachers. They all teach Form Two Green. Their names are Betty, Peter and John. Their personalities are as follows:-
- Betty: She is strict, pinches and abuses students, she gets offended easily and has a tendency to shout a lot at students; she is also generally impatient with students.
- Peter: He is reserved, hesitant and indecisive, he is slow in doing things and tends to rely on the advice of others.
- John: He is enthusiastic, firm and understanding, he is a quick and clear thinker and very disciplined.
- Describe the effect each of these personalities on the students with respect to learning. (6 mks)
- e) Explain three ways examination system in Kenya has affected attainment of objectives in Secondary Chemistry education. (3 mks)
- f) Explain factors a Chemistry teacher should consider when planning a lesson. (3 mks)
- g) Discuss functions of a preparation room in a chemistry laboratory. (3 mks)

QUESTION TWO

- a) Explain the benefits of inquiry based learning in chemistry. (5 mks)
- b) Draw an ASEI lesson plan to teach Form Twos structure and bonding.
Sub-topic: Influence of bond type and forces of attraction on physical properties of substances.
- c) Highlight the possible effects of free secondary school education on chemistry education in Kenyan schools. (4 mks)
- d) Explain why essay type items are rarely used in Chemistry tests in secondary schools. (3 mks)

QUESTION THREE

- a) Compare traditional teacher centered approach with inquiry based learning in terms of learning effectiveness. (4 mks)
- b) Design a lesson plan based on the 5E instructional model using content of the topic Rates of Reaction. (8 mks)
- c) Explain how you would effectively conclude a Form One Chemistry lesson. (3 mks)
- d) Discuss the importance of formative evaluation in teaching and learning of chemistry. (5 mks)

QUESTION FOUR

- a) To assist a student achieve levels of full participation in their communities, teachers must focus on the 21st Century skills that will help students adapt to the changing society and technology. Discuss the statement in the context of the key socioeconomic challenge in Kenya today.. (10 mks)
- b) Discuss laboratory management under:- (3 mks)
- i. Location
 - ii. Storage of reagents/chemicals
 - iii. Design
- c) Justify the use of demonstrations in the teaching of chemistry. (4 mks)
- d) State any three attitudes that could be instilled in the learners during practical lessons. (3 mks)

QUESTION FIVE

- a) Explain the elements of 5E instructional model, purpose, teacher and learner activities. (10 mks)
- b) Justify the need for improvisation of chemistry instructional resources in Kenyan Secondary Schools. (3 mks)
- c) Ordinary pure concentrated sulphuric (VI) acid is 98% by mass of the acid and 2% water. It is a dibasic acid with specific gravity (density) of 1.84g/cm^3 at 20°C . Prepare a standard solution of sulphuric (IV) acid. (4 mks)
- d) Explain characteristics of an ideal chart as a learning resource. (3 mks)