



KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

**THIRD YEAR EXAMINATION FOR THE AWARD OF THE
DEGREE OF BACHELOR OF EDUCATION
IN EARLY CHILDHOOD EDUCATION
SECOND SEMESTER, 2021/2022
(FEBRUARY - JUNE, 2022)**

ECDE 331: CHEMISTRY SUBJECT METHODS

STREAM: Y3 S2

TIME: 2 HOURS

DAY:

DATE: 00/05/2022

INSTRUCTIONS

1. *Do not write anything on this question paper.*
2. *Answer Question ONE [Compulsory] and any TWO questions.*

COMPULSORY QUESTION (30 marks)

1. a) Justify the inclusion of Chemistry in the Secondary School Science Curriculum. (10 marks)
- b) (i) Differentiate between a competency and Competency Based Curriculum . (5 marks)
- (ii) State the core competencies and values of CBC. (6 marks)
- c) Explain the benefits of virtual laboratories in chemistry teaching during the COVID-19 pandemic. (5 marks)
- d) List the 21st Century skills you may inculcate in learners as result of chemistry teaching. (4 marks)

ANSWER ANY TWO QUESTIONS (40 Marks)

2. Critical thinking and problem solving are some of the competencies emphasized in the secondary school curriculum. Objective nine of the secondary education emphasizes the need to provide learners with opportunities to develop into responsible and socially well-adjusted individuals.

a) Differentiate between critical thinking and problem solving in chemistry teaching.

(5 marks)

b) How can you enhance critical thinking and problem solving among learners?

(5 marks)

c) You are a chemistry teacher in Masomo Secondary School in a mountainous village in Kenya. The only access route to the school is by walking. Many of the villagers are chicken farmers who carry the eggs by foot to sell at the nearby town at the foot of a cliff. This is tedious and time consuming. At the corner on a highland, there is a sharp cliff directly overlooking the town. You think to yourself, "Why don't I devise a way that the farmers can drop their eggs directly down there without having to carry them?" Propose a design the farmers would use to deliver the eggs.

(10 marks)

3. The education sector in the country is shifting towards Competency Based Curriculum (CBC) that requires learners to engage in IBL to develop the requisite competences.

a) What does IBL entail? (3 marks)

b) State and explain the levels of IBL. (8 marks)

c) What role does a chemistry teacher play during IBL teaching and learning process? (3 marks)

d) Outline the benefits of IBL to the learner during chemistry teaching and learning. (6 marks)

4. The 5E instructional model is based on the constructivist approach to learning which states that learners build or construct new ideas on top of old ideas in chemistry teaching. The 5E model is suitable in inquiry learning environment as the teacher presents learning experiences with problematic, challenging but achievable situations that are slightly beyond the current level of understanding of learners.

a) State the components of the 5E instructional model as used in chemistry teaching and learning. (5 marks)

b) Discuss the components of the 5E instructional model outlining its purpose, teacher and learner activities for each component. (15 marks)

5. The actual chemistry lesson has three main basic steps. Discuss each of the steps by outlining their usefulness during the lesson. (20 marks)