



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER

MAIN EXAMINATION

FOR THE POST GRADUATE DIPLOMA IN EDUCATION

COURSE CODE: ESM 724E

COURSE TITLE: CHEMISTRY EDUCATION

DATE: 17/05/22

TIME: 2:00PM-4:00PM

INSTRUCTIONS TO CANDIDATES

Answer Question One and Any other TWO (2) Questions

TIME: 2 Hours

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QUESTION ONE (20 MARKS)

a. The Competency Based Curriculum advocates for three types of learner assessment, which include; assessment *for* learning, assessment *as* learning and assessment *of* learning. Explain the importance of each type of assessment in the teaching and learning of chemistry (14 marks).

b. Using examples, explain the main purpose for opting to use;

- i. Short answer question (4 Marks)
- ii. Long structured questions (4 Marks)
- iii. Describe the main skills that are emphasized in assessing practical work at KCSE (6 marks)

c. In your own opinion, state and explain one other method that you believe can be successfully used to assess chemistry (2 marks)

QUESTION TWO (20 MARKS)

In reference to laboratory safety, outline some of the common accidents in a chemistry school laboratory and explain their causes (6 marks).

i) what do you understand by the term a scheduled poison (2 marks)

ii) Describe how you would sequentially administer first aid to;

a) A learner who has accidentally swallowed a poisonous chemical in the laboratory (4 marks)

b) A learner who has accidentally burnt her hand over a Bunsen flame (4marks)

iii) Fire in a school chemistry laboratory can bring loss to property as well as harm to both the learners and staff. Identify any two types of firefighting-equipment that are stored in a chemistry laboratory and describe how they can be applied in the event of fire outbreaks. (4 marks)

QUESTION THREE (20 MARKS)

The Kenyan chemistry syllabus (2002), sets out general and lesson objectives for teaching any subject. When writing instructional objectives, it is important to specify the behavior to be changed.

- i) What is the difference between general and lesson objectives? **(4marks)**.
- ii) Instructional objectives are derived from aims of education, identify two instructional objectives from any chemistry topic of your choice and trace (link) the goal or aim of education from which it may have been derived **(4 marks)**
- iii) Instructional objectives use the SMART model, what do you understand by the acronym SMART in relation to achievement of prescribed specific objectives? **(6 marks)**
- iv) Using examples, describe the main components of an instructional objective? **(6marks)**

QUESTION FOUR (20 MARKS)

Chemistry can be best taught using learning or instructional resources.

- a) One of the resources that facilitates the teaching/ learning of chemistry is a laboratory.
 - i. Describe how a laboratory facilitates learners to achieve the prescribed learning objectives **(6 marks)**
 - ii. Name the four other resources that can be used for teaching chemistry **(4 marks)**
 - iii. Select one topic of your choice from the secondary school chemistry and outline how any of the named resources in (ii) above helps to impact the classroom instruction of chemistry. Clearly outline the learning experiences you will engage your learners for them to realize the stated learning objectives **(6 marks)**.
- a) Locally available resources are often used to complement conventional resources, through improvisation. Outline the advantages of using improvised resources for teaching chemistry, explain your response **(4 marks)**.

QUESTION FIVE (20 MARKS)

Proper storage of chemicals is important in a chemistry laboratory.

- a) Briefly explain why emphasis is placed on the aspect of proper storage of chemicals. **(6 marks)**
- b) The three guiding principles when storing chemicals are *storage by sections* of chemicals, storage based on the *dangerous nature* of chemicals and storage based on *quantity of chemicals*. Explain the importance of each guiding principle in the chemistry laboratory **(6 marks)**

c) Keeping a proper record of incidents in a chemistry laboratory is one of the aspects that is emphasized by staff working in the laboratory. Give three reasons why emphasis is placed keeping proper record of incidents in a chemistry laboratory **(3 marks)**

d) A school chemistry laboratory has many key features that are useful in when carrying out various laboratory activities. Explain the importance of the features listed below.

i) A first Aid Kit **(3 marks)**

ii) Fume chamber **(2marks).**