

NATIONAL UNIVERSITY OF LESOTHO

B.SC.ED. EXAMINATION

SCE 3241 – 8: SECONDARY LABORATORY WORK IN CHEMISTRY

JANUARY 2024

MARKS: 100

TIME: 3HRS

INSTRUCTION:

Answer all FOUR Questions

QUESTION 1

(a) Mention any **three** skills that students acquire through practical work in chemistry.

[3]

(b) Using **one** named concept/topic, clearly discuss how you would facilitate the lesson for student to develop the skills you mentioned in (a) indicating the roles of both the teacher and the students in the process.

[12]

(c) State and explain any **three** ways in which you would assess students on a practical activity.

[6]

(d) The current Lesotho General Certificate of Secondary Education (LGCSE) curriculum has only a written paper (Paper 3) as an alternative to practical assessment. Explain how this may limit adequate assessment of skills for practicals.

[4]

[Total= 25]

QUESTION 2

(a) Explain how a chemistry teacher with background knowledge in sociocultural theory could design and facilitate effective practical sessions.

[10]

(b) State and explain any **three** characteristics of a chemistry practical, which follows behaviorism principles.

[6]

(c) The following is an extract from the LGCSE syllabus- grade 9. Use the extract to answer questions (i) and (ii).

12. investigate properties of transition elements.	Concepts Chemical properties Oxidation state Physical properties - density - conductivity - fixed points - hardness - colour of compounds Uses of transition elements e.g catalysis Skills	<ul style="list-style-type: none">• Teacher and learners discuss chemical properties (variable oxidation states) of transition elements.• Teacher and learners discuss physical properties of transition elements.• Learners explore colours of different compounds of the same transition
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- (i) Write two lesson objectives. [2]
- (ii) Write one question aimed at assessing:
- conceptual knowledge,
- procedural knowledge and
- practical application. [3]
- (iii) Explain the importance of incorporating the above knowledge areas (in (ii) above) in the assessment of practical work. [4]

[Total= 25]

QUESTION 3

(a) The bottle containing sulphuric (H_2SO_4) acid shown below was found in a chemistry laboratory. State and explain any two hazards the bottle poses for people working in the laboratory.

[4]



(b) State two safety measures that you would take to ensure that the hazards you cited in (a) do not occur. [4]

(c) Explain how the chemicals or instruments bearing the symbols below should be **handled** and **stored**.



[4]



[4]

iii.  [4]

iv.  [4]

(d) Mention any **one** barrier to practical work in chemistry. [1]

[Total= 25]

QUESTION 4

(a) Explain any three possible causes of fire in a chemistry laboratory. [4]

(b) Mention **three** basic equipment/substances that could be used to put off fire in a chemistry laboratory and explain why all of them are necessary instead of one.

[6]

(c) Explain the importance of adequate ventilation in a chemistry laboratory and any two ways of ensuring that there is adequate ventilation. [5]

(d) Discuss any five considerations to be made when planning for a laboratory practical lesson. [10]

[Total = 25]