

NATIONAL UNIVERSITY OF LESOTHO

B.SC.ED. EXAMINATION

SCE 3201 – 8: LABORATORY SKILLS AND MANAGEMENT

JANUARY 2024

MARKS: 100

TIME: 3HRS

INSTRUCTION:

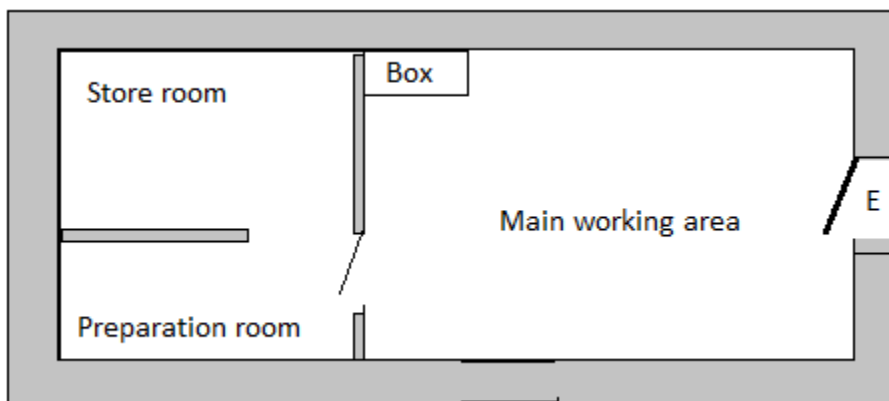
Answer all FOUR Questions in this paper

Question One

- (a) With reference to a concept from one of your teaching subjects, explain
- (i) Why you may use animations in teaching, [4]
 - (ii) Your role as a teacher during teaching with animations, [3]
 - (iii) Limitations of animations as compared to physical practical work activities in teaching. [4]
- (b) State any **two** instructional materials that could be effective in the teaching and learning science and mathematics in most schools in Lesotho currently. Give examples to support your answer. [6]
- (c) Describe any **two** improvised instructional materials that students can develop as they learn a particular science or mathematics concept relevant to their curriculum. [4]
- (d) With the help examples, state any **two** reasons for improvisation. [4]
- [Total 25]**

Question two

- (a) The diagram below shows an outline layout of a floor plan for a general science laboratory. Study the diagram and answer the questions that follow.



- (i) Access to the laboratory is through 'E'. Explain why this design is not ideal for a safe laboratory. [4]

- (ii) The box in the main working area contains isolation valves for gas and main switch for all electrical socket in the laboratory. Explain why this is a desirable part of laboratory design and why its position may be risky. [5]
- (b) Describe any **five** features of a desirable material for flooring in a general science laboratory. [10]
- (c) Explain any **three** structural differences between a physics and a chemistry laboratory. [6]
- [Total 25]**

Question three

- (a) State and explain any **four** roles of the head of science department in relation to laboratory management. [8]
- (b) Mention **two** challenges that the head of science department who has no background in science might face regarding laboratory management. [2]
- (c) The following practices given below are essential in laboratory management. Justify the importance of each practice with **two** points and mention responsible person/ people.
- (i) Keeping and inventory. [5]
- (ii) Stock taking. [5]
- (d) Name any **two** roles of a laboratory technician. [2]
- (e) Explain why it would be recommended that all secondary schools in Lesotho should have qualified laboratory technicians. [3]

[Total 25]

Question four

- (a) Mention any **five** pieces of essential information, which is likely to be found on display for a preserved animal specimen. [5]
- (b) Safety is one of the key considerations in laboratories. Explain how safety is ensured in:
- (i) Storage [5]
- (ii) Laboratory sessions [5]
- (iii) Disposal of laboratory waste [5]
- (c) Describe any **three** precautions that need to be taken when heating solutions in the laboratory. [5]

[Total: 25]