

2404/306

2407/306

2411/306

LABORATORY PRACTICE AND MANAGEMENT

Oct./Nov. 2011

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN APPLIED BIOLOGY
DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY
DIPLOMA IN ANALYTICAL CHEMISTRY**

LABORATORY PRACTICE AND MANAGEMENT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Mathematical tables/scientific calculator.

This paper consists of TWO sections; A and B.

Answer ALL questions in section A and any THREE questions from section B.

Each question in section A carries 4 marks while each question in section B carries 20 marks.

Maximum marks for each part of a question are indicated.

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

height of water still?
Barometer?

SECTION A (40 marks)

Answer ALL the questions in this section.

1. State any **four** factors to be considered when deciding the space allowance between benches in the laboratory.
 - passing height - Grasp height for trolley.
 - open drawers - The type of bench which is to be used.
 (4 marks)
2. Explain any **four** ways of sourcing personnel by an organization.
 - Recruitment
 (4 marks)
3. Distinguish between the System Management Approach and Contingency Management Approach theories.
 (40marks)
4. (a) Define the following terms:
 (i) molarity; - $M = \frac{n}{V}$ where n is no. of moles and V is volume in ltr. (10mark)
 (ii) normal solution. (10mark)
 (b) Calculate the mass of Lead II Nitrate $Pb(NO_3)_2$ that will be required to prepare 1000 ppm of Lead II ions (Pb^{2+}) in 500cm³ volumetric flask.
 $Pb = 207, N = 14, O = 16.$ (2 marks)
5. (a) Classify the following chemicals based on their storage characteristics:
 (i) Silver Nitrate; - light sensitive (1 mark)
 (ii) Picric acid. - inflammable EXPLOSIVE (1 mark)
 (b) Describe the storage of the chemicals in 5(a) above. (2 marks)
6. (a) Define the term "Aqua regia". $Mg_3C_2O_2$ (1 mark)
 (b) Describe the cleaning of new sintered glass discs. (3 marks)
7. (a) Draw a diagram to illustrate an apparatus used to pick up spilled mercury. (2 marks)
 (b) Describe the proper disposal of sodium oxide. (2 marks)
8. (a) Differentiate between arterial bleeding and venous bleeding.
 (2 marks)
 (b) Distinguish between an emetic and a demulcent.
 (2 marks)
 Emetic: Induces vomiting, weak solution.
 Demulcent: soothe pain, egg.

9. State the functions of the following glass blowing tools:

- (a) carbon plate;
- (b) flare tools;
- (c) annealing oven;
- (d) lathe machine.

(4 marks)

10. State any four disadvantages of central stores.

(4 marks)

- not of convenience - procedure
- fear of pressure when serving a big organization

SECTION B (60 marks)

Answer any **THREE** questions from this section.

11. Explain the precautions undertaken when handling the following chemicals:

- (a) inflammable chemicals;
- (b) strong acids.

store in separate room
 temp regulated
 fire jacket
 ventilation
 fire proof floor
 gloves

(7 marks)

12. Explain the installation of the following equipment:

- (a) mercury fortin barometer;
- (b) laboratory still.

1.2 m - Transpiration
 2.5 m - ventilation
 - humidity
 - control

(13 marks)

13. (a) State the advantages of using wood as a material for construction of animal cages.

- cheap
- can be immobilized and move again
- Not easily corroded by chemicals from urine
- locally available
- long lasting

(4 marks)

(b) Outline the steps involved in the Holger - Nielsen (Back - pressure lift) Artificial Respiration method.

(16 marks)

List any five applications of cryogenics.

Analgesic
 - can be used for cooling muscle
 - Helium is used for rescue
 full
 frosty
 frozen

(5 marks)

(i) Explain the composition techniques in photography.

(7 marks)

(ii) Contrast between the view finder camera and the reflex camera.

Cryogenics view finder

(8 marks)

15. (a) State the objectives of a trade union.

(7 marks)

(b) Explain the process of Collective Bargaining.

(13 marks)

Lathe Machine

Storage temp? Water tank