

Name..... ADM No.

School..... Candidate's Signature.....

Date.....

LANJET JOINT EVALUATION

SEPTEMBER 2022

FORM FOUR

PHYSICS

Paper -232/2

Time: 2 hours

INSTRUCTIONSTO CANDIDATES

- Write your name and index number in the spaces provided.
- This paper consists of two sections, A and B.
- Answer **ALL** the questions in the spaces provided.
- All working must be shown clearly in the spaces provided in this booklet.
- Mathematical tables and electronic calculators **may** be used.

FOR EXAMINER'S USE ONLY

Section	Question	Maximummarks	Candidate's score
A	1-10	25	
B	11	14	
	12	15	
	13	14	
	14	12	
	Total score	80	

PHYSICS PP2
SECTION A (25 MARKS)

1. State the laws of reflection (2 marks)

2. Distinguish between real and virtual image (2mark)

3. An object is placed 30cm from a concave mirror of focal length 20cm. calculate the magnification (2marks)

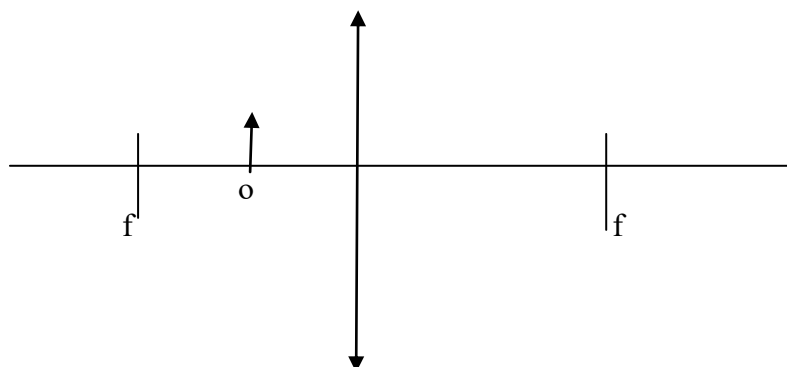
4. A small electromagnetic is used for lifting and releasing a small steel ball.
 - a) Explain why soft iron is better material to use for the core (2marks)

 - b) In order to lift a slightly larger ball, it is necessary to make a stronger electromagnetic. State three ways in which the electromagnet could be more powerful. (3marks)

5. State one way in which radio waves can be detected (1mark)

6. Define the term lens (1mark)

7. (i) The figure below shows a convex lens with an object before it. Draw rays to identify the position of image formed (2marks)

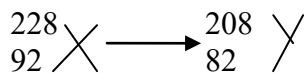


(ii) State one device in which such a set-up is used (1 mark)

8. (a) Define electric current (1 mark)

(b) A current of 3 A passes through bulb B for 4 minutes. Determine the quantity of charge through B. (3 marks)

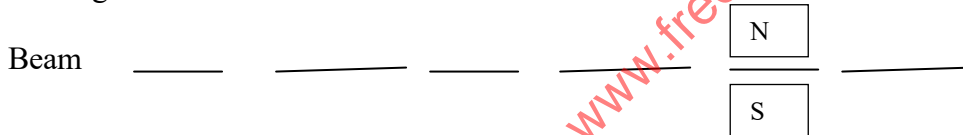
9. Radioactive substance decays as shown below



How many alpha and beta particles are emitted?

(3 mks)

10. The figure below represents a cathode ray beam passing between pole pieces of a permanent magnet. Show the direction of the beam. (2 marks)

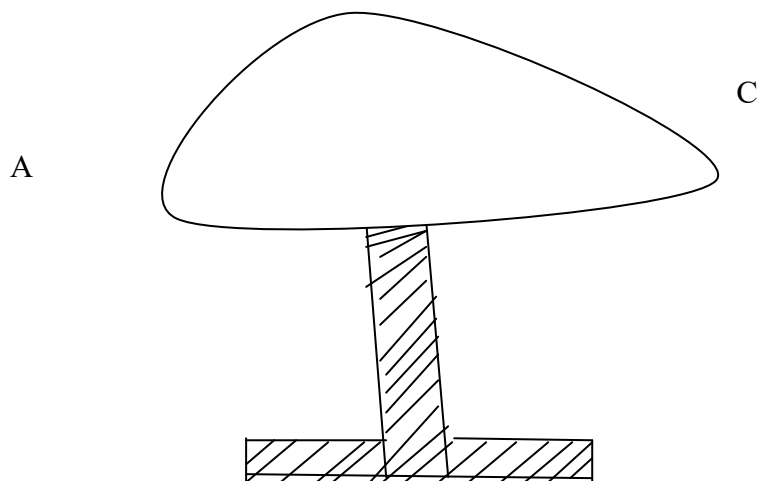


SECTION B (55 MARKS)

9. a) Define capacitance (1 mark)

b) State any two ways of decreasing the capacitance of a parallel plate capacitor (2 marks)

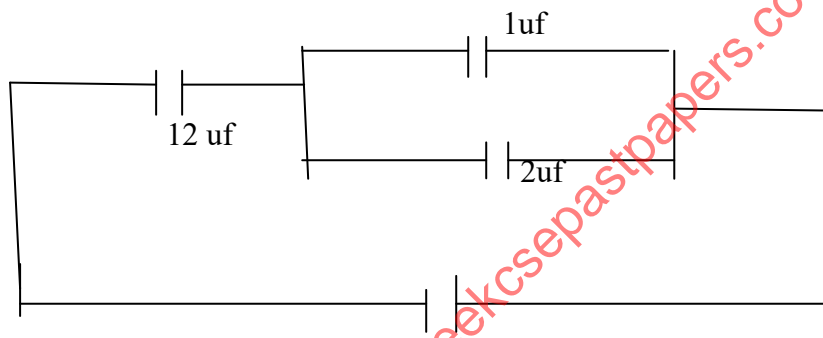
c) The diagram below shows a pear shaped charged conductor on an insulating stand. (Charge not shown on the diagram)



Show the charge distribution on the diagram.

(2mks)

d) The figure below shows three capacitors A, B and C connected to a battery of e.m.f 12.0V and zero internal resistance



Determine:-

12.0 V

i) The effective capacitance of the circuit (3marks)

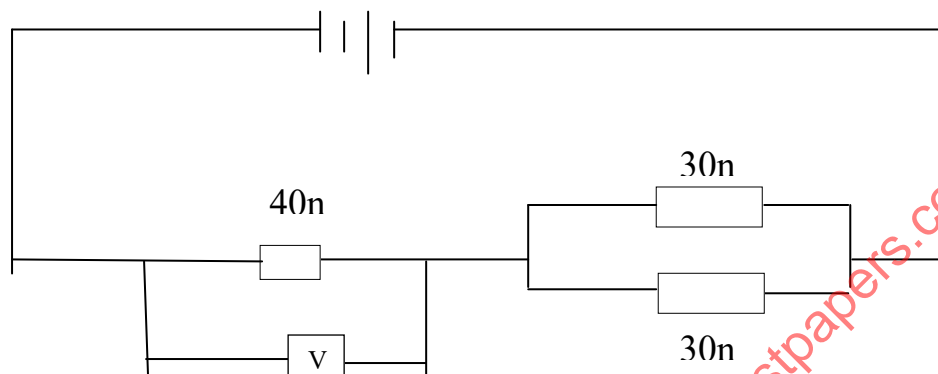
i) The p.d across the 12 uF capacitor (3marks)

ii) Charge stored in the 1 uF capacitor (3marks)

10. a) You are provided with the following;

A cell and holder, a switch, a rheostat, an ammeter, a voltmeter and connecting wires. Draw a diagram for a circuit that could be used to investigate the variation of the potential difference across the cell with the current drawn from the cell (1mark)

b) The cell in figure has an e.m.f of 2.6V and negligible internal resistance.



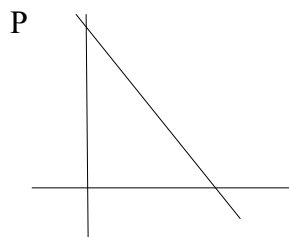
Determine the;

i) Total resistance in the circuit (2marks)

ii) Current in the circuit (3marks)

iii) Reading on the voltmeter (3marks)

c) The sketch below shows the p.d across a cell for various values of current through a resistance wire

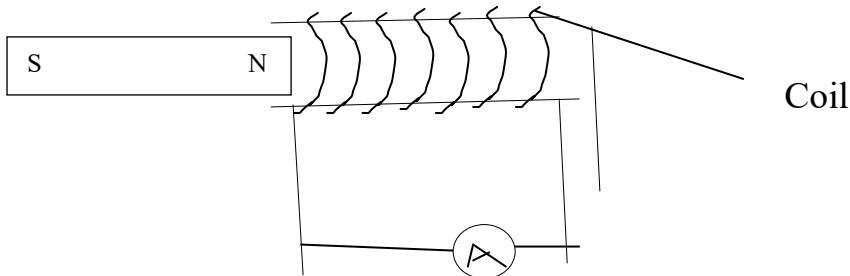


State and explain the significance of p.

(2mks)

d) State Faraday's laws of electromagnetic induction (1 mark)

e) A bar magnet is moved into a coil of insulated copper wire connected to a center-zero galvanometer as shown below.



i) Show on the diagram, the direction of induced current. (1 mark)

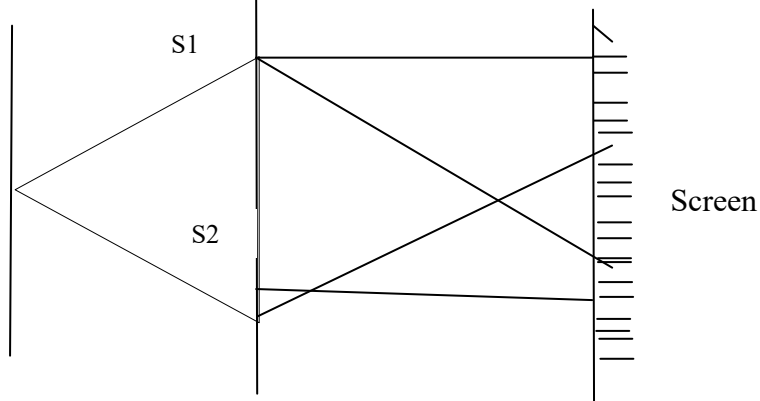
ii) State and Explain what is observed on the galvanometer when the north pole of the magnet is moved into the coil and then withdrawn from the coil (2 marks)

11. a) What is meant by the term work function (1 mark)

b) When the frequency of the illuminating radiation is just equal to the threshold frequency of the surface, no photoelectric effect is observed. Explain (1 mark)

c) A surface whose work function W_0 is 2.4 eV is illuminated by light of frequency $3.0 \times 10^{15}\text{ Hz}$. Calculate the maximum kinetic energy of the ejected photoelectrons ($h = 6.63 \times 10^{-34}\text{ Js}$) (3 marks)

d) The figure below shows an experimental arrangement. s_1 and s_2 are narrow slits.



State what is observed on the screen when the source is

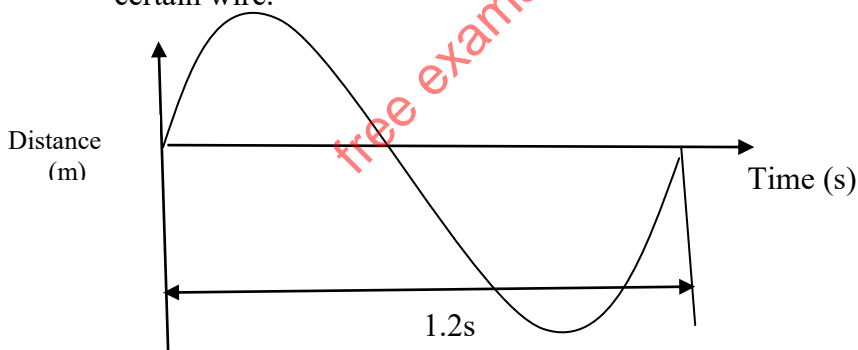
i) Monochromatic (2mark)

ii) White light (2mark)

iii) What is the function of s_1 and s_2 (2marks)

iv) Distinguish between longitudinal and transverse wave giving examples in each case. (2marks)

e) The figure below shows the displacement -time and displacement -distance graph of a certain wave.

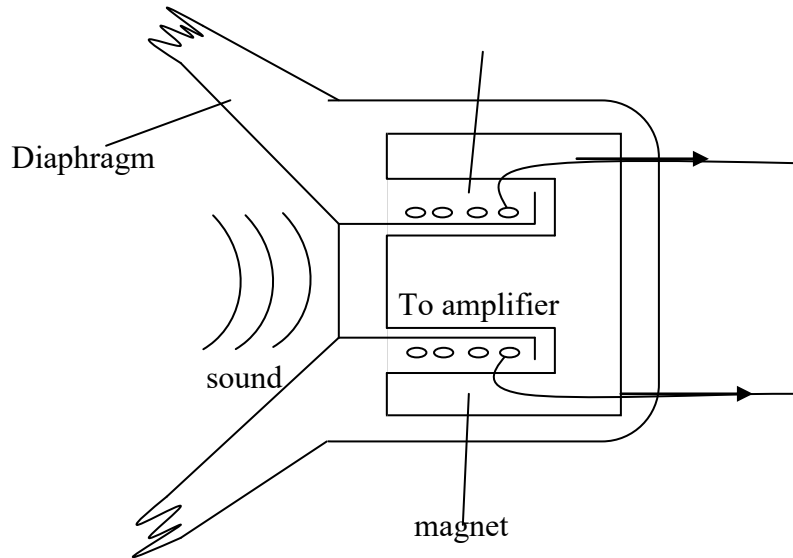


From the diagram, if the speed of the wave is 320m/s, determine the wavelength. (2mks)

14. a) State the lenz's law of electromagnetic induction.

(1mk)

b) The following figure shows a simple microphone in which sound worn from a person talking cause the diaphragm to vibrate.



i) Explain how a velocity current is induced in the coil when the diaphragm vibrates. (2mks)

ii) State two ways in which the induced current in above can be increased. (2mks)

c) A transformer with 1200 turns in the primary coil and 120 turns in the secondary coil has 400v applied to its primary circuit from an ac. It is found that when a heater is connected to the secondary circuit, it produces heat at the rate of 600w. Assuming 100% efficiency, determine the;

i) Voltage in the secondary circuit. (3mks)

ii) The current in the primary circuit. (3mks)