

232/2

PHYSICS

Paper 2

Time: 2 hours

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ALLIANCE GIRLS HIGH SCHOOL
BLOCK EXAM

INSTRUCTIONS TO CANDIDATES.

1. Answer ALL the questions in the spaces provided after each question paper.
2. Additional papers must not be inserted. All working must be clearly shown where necessary.
3. Candidates will be penalized for recording irrelevant information and incorrect spelling especially of technical terms.
4. All working must be clearly shown where necessary.

FOR EXAMINER'S USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
A	1 - 15	25	
B	16	14	
	17	9	
	18	11	
	19	9	
	20	12	
TOTAL		80	

This paper consist of 8 printed pages

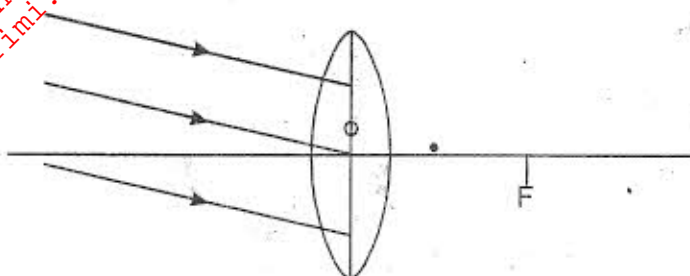
Candidates should check the questions paper to ensure that all the pages are printed as indicated and no questions are missing.

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SECTION A (25 MARKS)

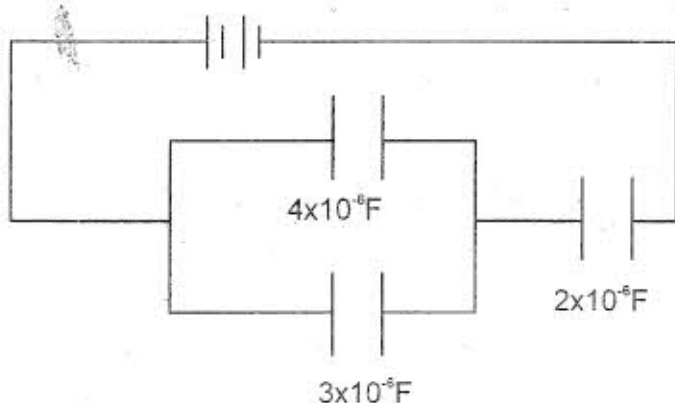
Answer ALL the Questions in this section.

1. The figure below show parallel rays incident to a convex lens.



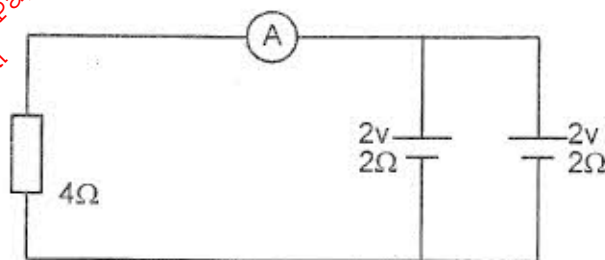
Complete the diagram to show the rays after refraction. (1 mark)

2. State Faraday's law (1 mark)
3. What type of radiation is used in remote control systems of television sets? (1 mark)
4. State one energy change, which take place when fast moving electrons impact a metal target in X-ray tube. (1 mark)
5. Distinguish between an intrinsic and extrinsic semiconductor. (1 mark)
6. In the circuit below find the effective capacitance. (3 marks)



7. A radioactive element has a half-life of 27 seconds. Determine how long it will take for $\frac{7}{8}$ of the element to decay. (2 marks)

8. Determine the reading of the ammeter in the circuit shown below if the cells have a resistance of 2Ω each, and Emf of 2V. (2 marks)



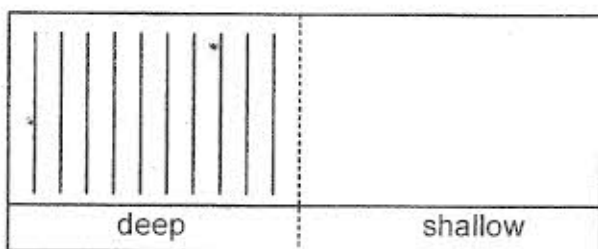
A current of 8A flows through a circuit for 1.5 minutes. How much charge passes through the circuit. (2 marks)

10. An object placed 5cm in front of a converging lens forms an image 3 times larger than itself. What is the image distance from the lens? (3 marks)

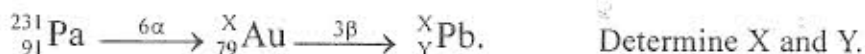
11. A wire of resistance 18Ω is cut into three equal lengths, if the three pieces of wires are connected in parallel, what is their combined resistance. (3 marks)

12. Define critical angle. (1 mark)

13. The figure below shows a wave fronts travelling from a deep region towards a shallow region. Complete the diagram. (1 mark)



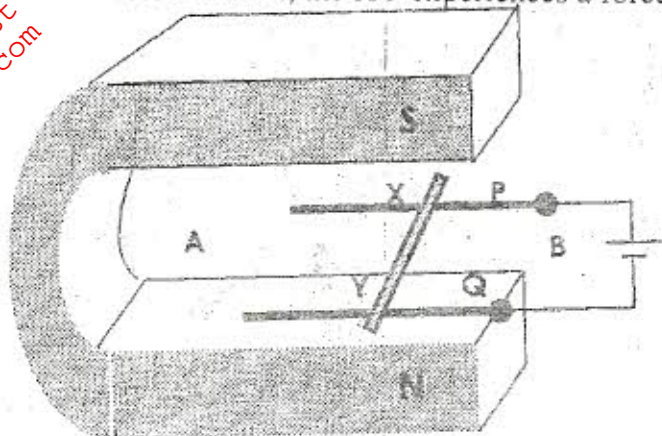
14. The following equations represents the α and β decay of a radio active element. (2 marks)



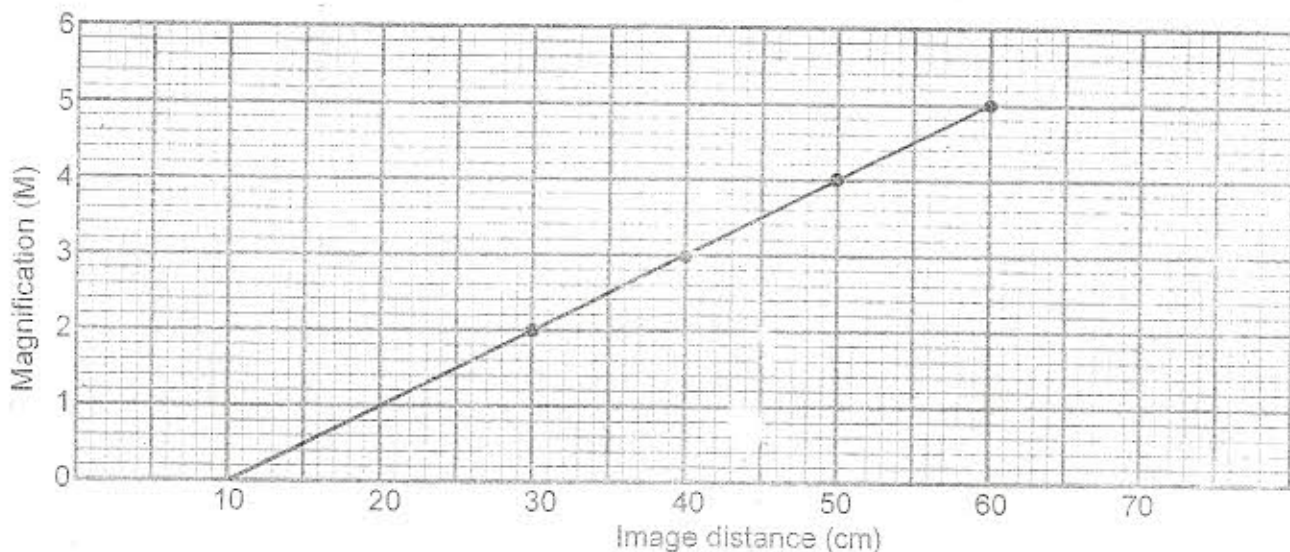
15. State Ohms law. (1 mark)

SECTION B (55 MARKS)

16. (a) A copper rod XY lies across two fixed metal rods P and Q connected to a battery. When the key in the circuit is closed, the XY experiences a force. (2 marks)



- (i) In which direction does the wire XY experience the force? Indicate on the diagram. (1 mark)
- (ii) What would be the direction of the force on XY if both the current and the magnetic field are reversed simultaneously. (1 mark)
- (iii) State two ways in which the force on X-Y can be increased. (2 marks)
- (iv) Name two instruments which make use of this effect. (2 marks)
- (b) (i) Define magnification. (1 mark)
- (ii) Distinguish between a real and a virtual image. (1 mark)
- (iii) The graph in the figure below shows the variation of magnification M with image distance for concave mirror.



From the graph determine,

(i) the object position when the image position is 30cm

(3 marks)

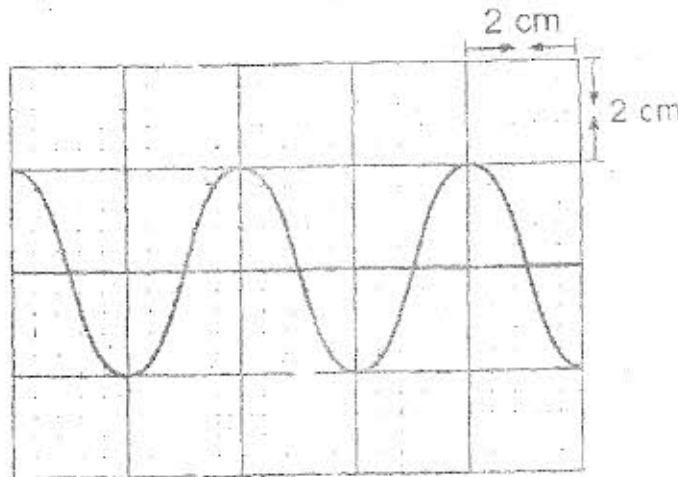
(ii) focal length of the mirror.

(3 marks)

17. (a) Give two advantages of using a C.R.O instead of a voltmeter in measuring voltages.

(2 marks)

(b) The figure below shows an a.c. voltage. If the Y-gain control reads 10V/cm and the time base reads 5 milliseconds/cm



Calculate:

(i) The frequency of the alternating voltage

(3 marks)

(ii) Peak voltage of the alternating voltage

(3 marks)

(c) The figure below shows a cathode ray entering a magnetic field



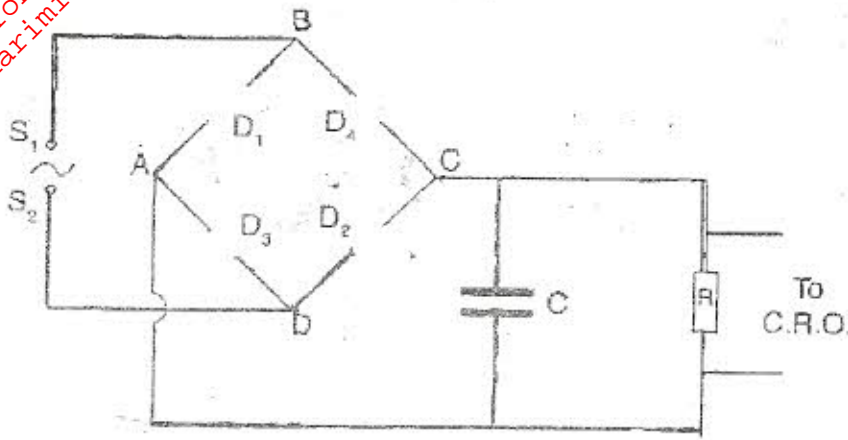
Complete the figure to show how it is deflected in the magnetic field

(1 mark)

18. (a) What is a rectifier

(1 mark)

(b) The figure below show a circuit used for bridge full wave rectification.



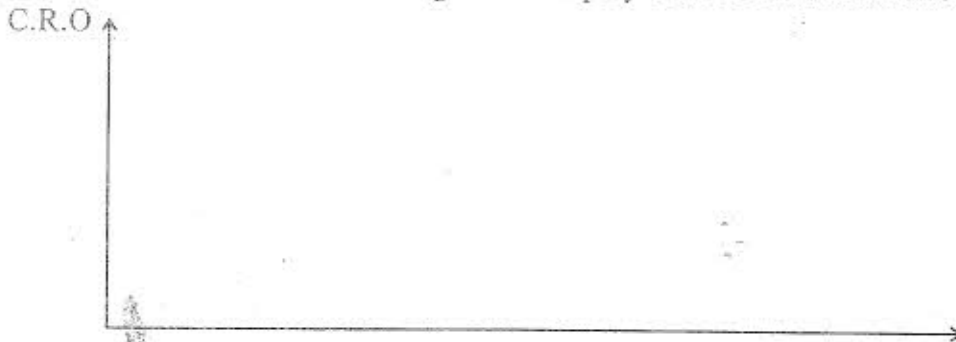
(i) Insert diodes D_1, D_2, D_3 and D_4 to complete the circuit.

(2 marks)

(ii) What is the use of capacitor C

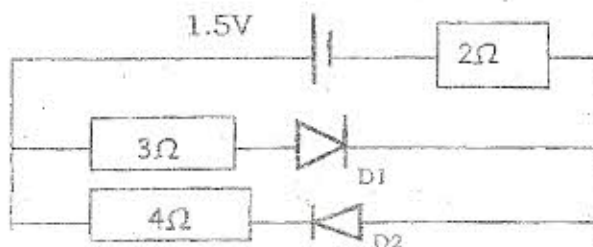
(1 mark)

(iii) On the axis below draw a voltage-time display of the rectification observed on the



(2 marks)

(c) The figure below shows diodes D_1 and D_2 connected to resistors in a circuit.



(i) Calculate current through each resistor

(3 marks)

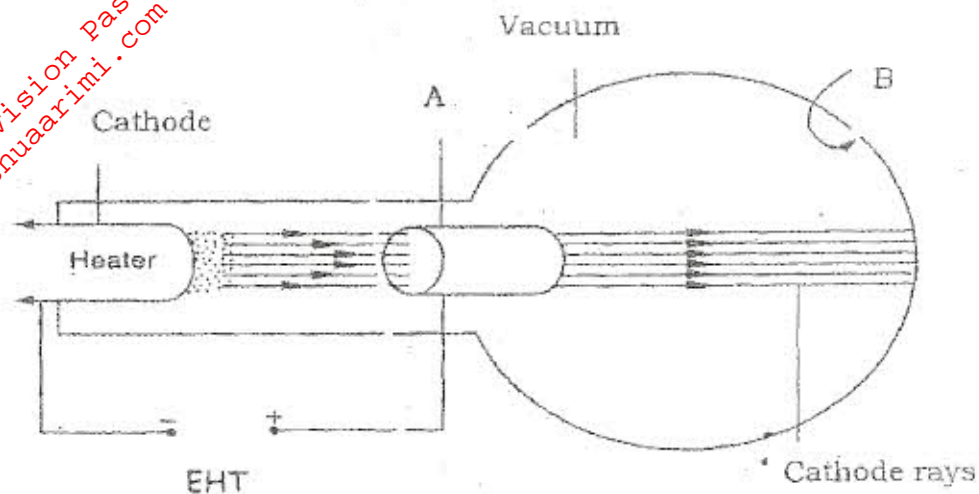
(ii) Find voltage across the 3Ω resistor

(2 marks)

19. (a) (i) What are cathode rays (1 mark)

(ii) State one difference between cathode rays and Gamma rays. (1 mark)

(b) The figure below shows a cathode ray tube



State the uses of:

(i) Heater (1 mark)

(ii) A (1 mark)

(iii) B (1 mark)

(iv) Extra High Tension (E.H.T) (1 mark)

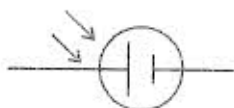
(c) How can intensity of the cathode rays reaching the screen be increased? (1 mark)

(d) Why is the tube evacuated (1 mark)

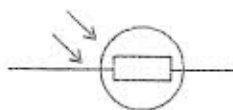
20. (a) What is photoelectric effect? (1 mark)

(b) What two factors affect photoelectric effect (2 marks)

(c) The figure below shows symbols of photosensitive cells.



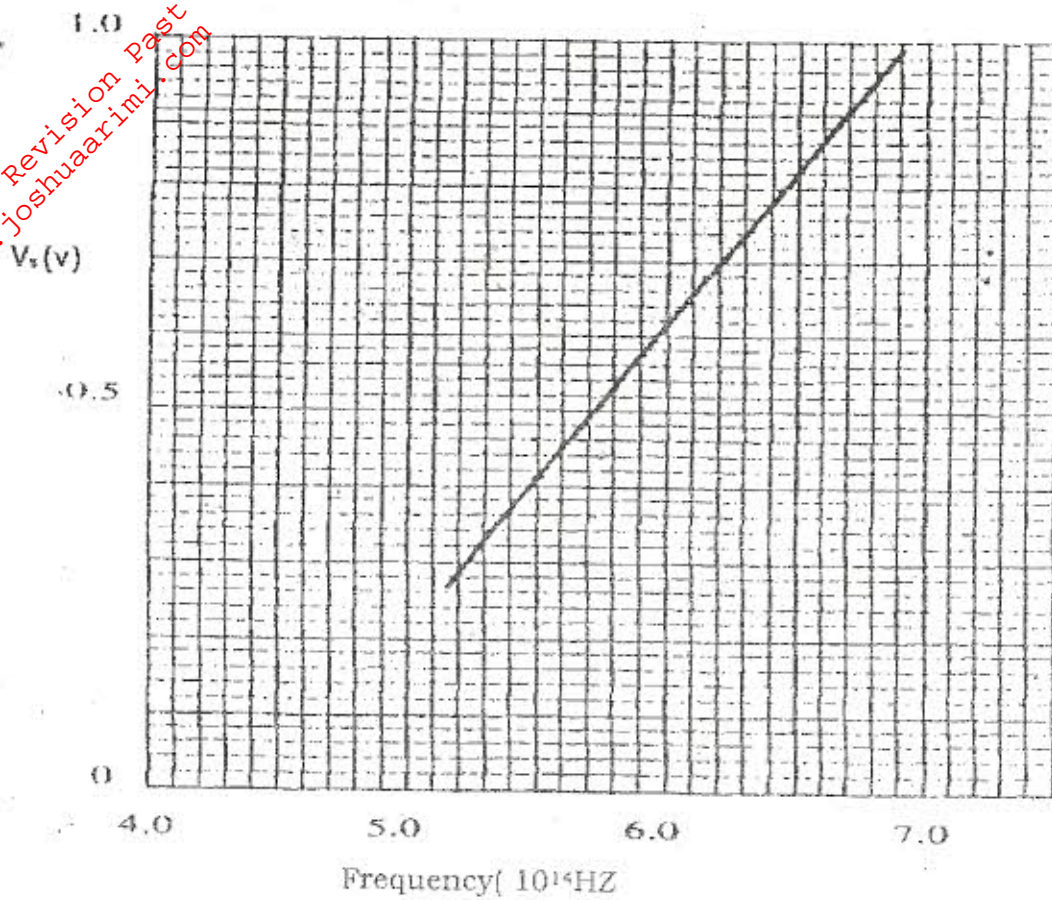
Identify (i)



(iii)
72

(2 marks)

(d) Figure below shows a graph of stopping potential V_s against frequency f of light falling on a certain metal surface. ($e = 1.6 \times 10^{-19} \text{C}$)



- (i) Determine the threshold frequency (2 marks)
- (ii) Planks constant. (3 marks)
- (iii) Work function of the metal (2 marks)