

FORM FOUR CLUSTER KCSE MODEL10

PHYSICS PAPER 2 QUESTIONS

SECTION A (25 Marks)

Answer all questions in this section in the spaces provided

1. Give a reason why it is not advisable to lit a match stick near a charging battery
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2. A boy holds a large concave mirror of focal length 1m,60cm from his face. State the two characteristics of his image in the mirror.
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3. The refractive index of oil is 1.2 and that of glass is 1.5. Calculate the refractive index of glass with respect to oil.
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.....
- 4.

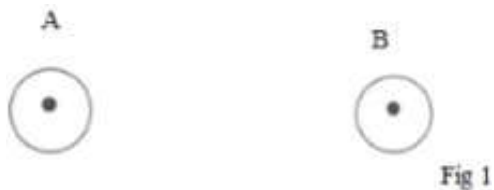
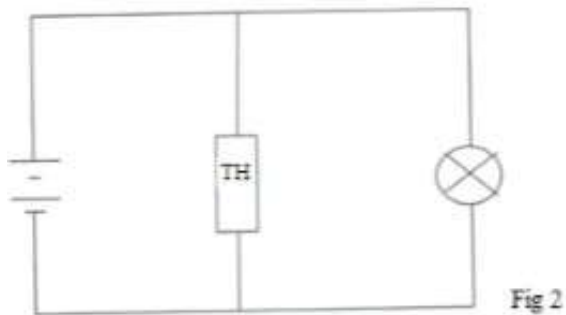


Figure 1 above shows two parallel current carrying conductor A and B placed close to each other. The direction of the current is out of the paper.

- i) Sketch the magnetic field pattern. (1mark)
 - ii) Indicate the force F due to the current on each conductor. (1mark)
- 5.



A thermistor TH is connected in parallel with a bulb as shown in fig. 2. The bulb is lit. When the thermistor is steadily heated the brightness of the bulb reduces. Explain this observation

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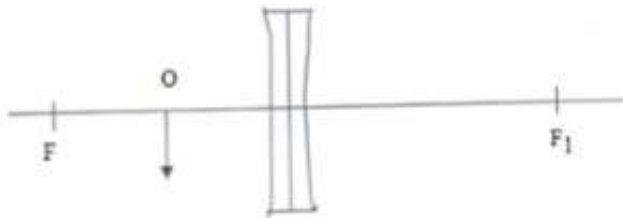
6. A polythene rod may be charged by rubbing it with a cloth while being held in the hand but metal rod cannot be charged in a similar way. Explain why

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7. A heater of resistance R1 is rated 9p watts and v volts, while another one of the resistance R2 is rated 3p watts and $\frac{v}{3}$ volts. Determine R1 /R2

.....

8. Figure 3 shows an object O placed in front of a concave lens with principle foci F and F1. Construct a ray diagram to locate the position of the image.



9. In an attempt to make a magnet, a form two student used the double stroke method as shown below



State the polarities at the end A and B.

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10. Fig. 4 shows the table of electromagnetic spectrum in the increasing order of frequency.

P	X-rays		Q	Infrared	
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Figure 4

i) Identify the radiations marked P and Q. (1mark)

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ii) State one detector of radiation Q. (1mark)

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11. . Two capacitors $C_1=3 \mu\text{F}$ and $C_2=5.0\mu\text{F}$ are connected in parallel to a battery of e.m.f 3.0v.

Determine;

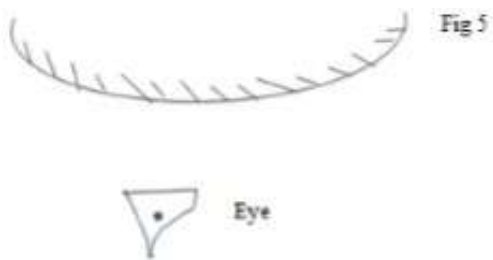
i) The effective capacitance (1mark)

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ii) The charge stored in $5\mu\text{F}$ capacitor (2marks)

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12. . Fig 5 below shows a convex mirror.

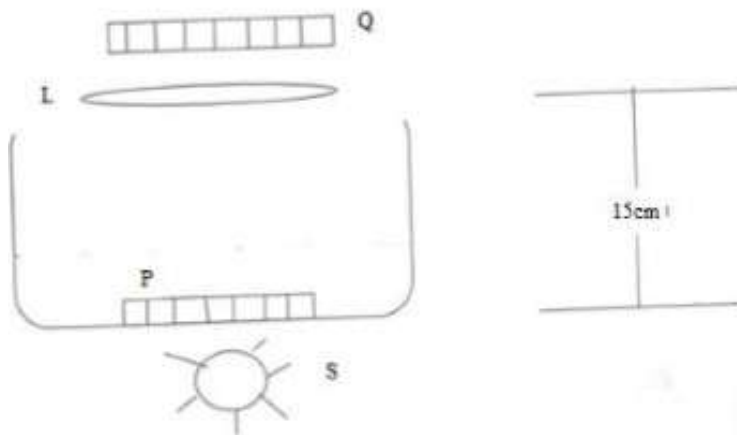


By sketching a pair of incident and reflected rays show how convex mirror provides to the eye, a wider field of view

SECTION B (55 Marks)

Answer all the questions in this section.

13. . a) Figure 6 below L is a convex lens of focal length 10cm, S is a source of light, P is a metal of length 3cm lying at the bottom of a beaker and Q is the image of the metal.



i) Determine position of Q from the lens (3marks)

.....

ii) What is the length of Q (2marks)

.....

iii) When water is added to the beaker, the apparent depth of the metal will be 5cm.

Explain qualitatively the position and size of Q. (3marks)

.....

b) A compound microscope is made by arranging two convex lenses of foci 10mm and 15mm respectively so that they are 40mm apart and on the same axis. Represent this information on a scale diagram and complete the construction of rays to show how image of an object height 5mm placed 15mm from objective lens is seen by an observer. (4marks)

14. a) i) State two factors that affect the resistance of a metallic conductor. (2marks)

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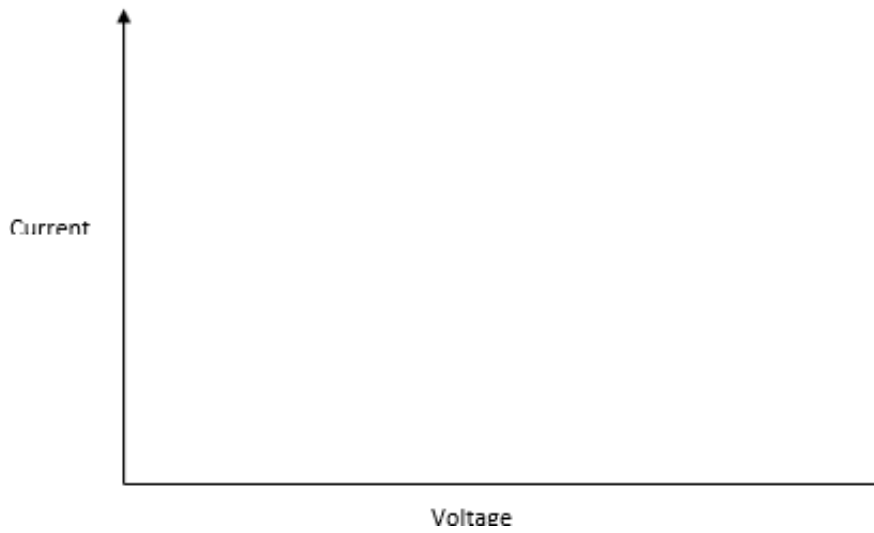
ii) Distinguish between electromotive force E.M.F and terminal voltage (v) (1mark)

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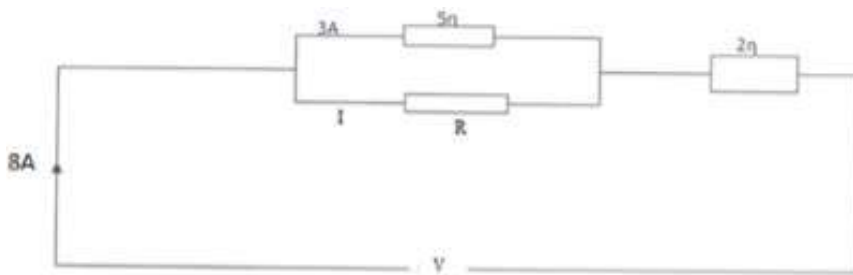
iii) Write down an equation relating electromotive force E, Terminal voltage V and lost voltage (Ir) (1mark)

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iv) Sketch on the grid provided below a graph of currents against voltage showing the relationship for a metal and Torch bulb. (2marks)



b) The figure below shows an electrical circuit with some quantities represented by R I and V



Calculate the values of

i) I (1mark)

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ii) R (2marks)

.....

iii) V (2marks)

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15. a) i) State the two difference between a step up transformer and step down transformer. (2marks)
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- ii) List one property of soft iron that makes it suitable for use in a transformer. (1mark)
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- b) A transformer has 95% efficiency. If the number of turns in the primary circuit and secondary circuit are 100 and 2000 respectively and the power input in the primary circuit is 100w at a current of 2.0A.
Determine:
- i. The power output (1mark)
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- ii. The primary voltage (3marks)
-
-
-
- iii. The secondary voltage (3marks)
-
-
-
- iv. The secondary current (2marks)
-
-

16.