Name: ……Adm. No: ……Class:……..

232/2
PHYSICS
Paper 2
(THEORY)
.
Time: 2 Hours

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TERM 2

Kenya Certificate of Secondary Education (K.C.S.E)

PHYSICS
Paper 2
Time: 2 Hours

INSTRUCTIONS TO CANDIDATES:-

- *Write your name, index number and class in the spaces provided above.*
- *This paper consists of two sections; A and B*
- *Answer all the questions in section A and B in the spaces provided*
- *All working must be clearly shown.*
- *Mathematical tables and electronic calculators may be used*
- *This paper consists of 10 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*
- *Candidates should answer the questions in English.*
- *Take g=10N/kg*

For Examiner's Use Only:

Section	Question	Maximum Score	Candidate's Score
A	1 – 11	25	
B	12	16	
	13	14	
	14	13	
	15	12	
Total Score		80	

SECTION A: 25 mks

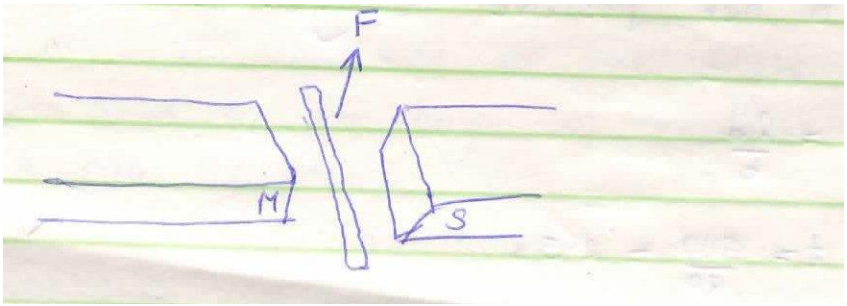
1. A Circuit consists of a battery, metal wire, ammeter and a switch connected in series. The switch is closed and the ammeter reading noted. The metal wire is now heated.

(a) State the observation made on the ammeter reading. (1mk)

(b) Give one reason for the above observation made. (1mk)

2. 5 images are formed when two mirrors are inclined at an angle between them. Determine the angle of inclination. (2mks)

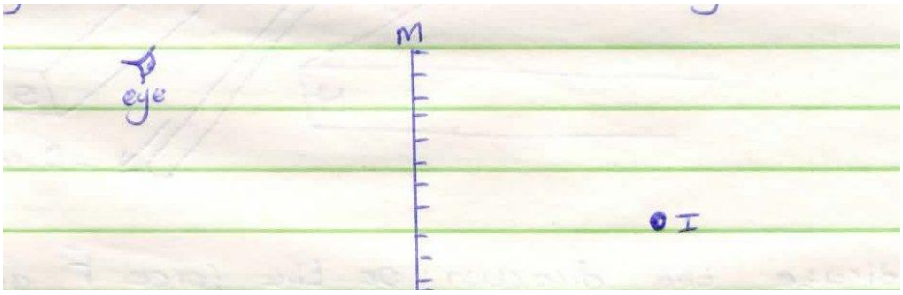
3. A current carrying conductor AB is a magnetic field as shown in the figure below.



(a) Indicate the direction of the force F acting on the conductor. (1mk)

(b) State two factors that determine the direction of the force F. (2mks)

4. The figure 1 below shows the image behind a mirror M



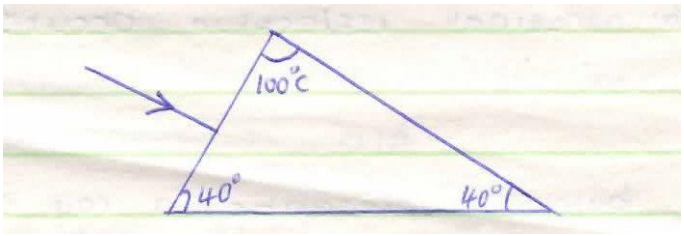
By ray diagram construction, locate the position of the object. (2mks)

5. A negatively charged rod is brought near the cap of a leaf electroscope. The cap is then earthed momentarily by touching with a finger. Finally the rod is withdrawn. State and explain the observation mode. (2mks)

6. A student stands at a distance 400m from a wall and claps two pieces of wood. After the first clap, the student claps whenever an echo is heard from the wall. Another student starts a stopwatch at the first clap and stops it after the twentieth clap. The stopwatch records a time of 50 seconds. Find the speed of sound. (2mks)

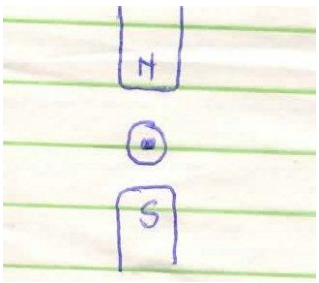
7. In the fig. 4 shown below (not drawn on scale) sketch the path of a ray till it emerges from the prism.

(1mk)



8. Describe the changes that can be observed during discharging process of lead-acid accumulator. (2mks)

9. The figure below shows a current carrying conductor placed perpendicularly between the poles of a magnet.



(i) Show on the diagram the magnetic field pattern. (1mk)

(ii) The direction of the net force on the conductor. (1mk)

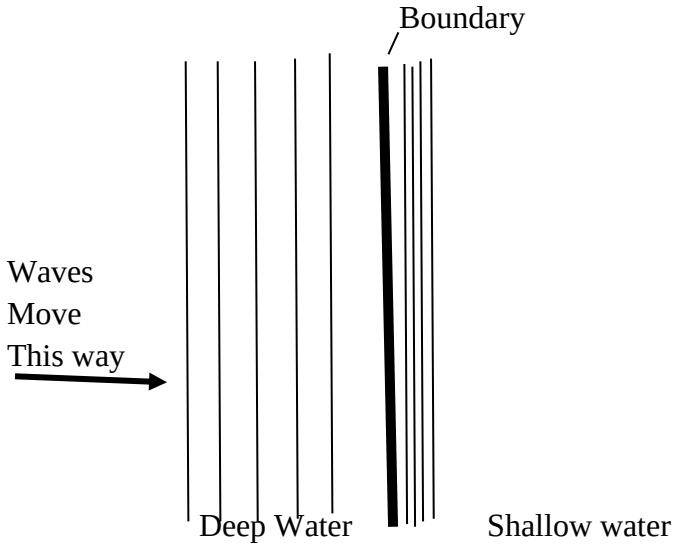
10. Using domain theory, describe how a nail can be magnetized through hammering. (2mks)

11. (i) Define focal plane. (1mk)

(ii) State two properties of images formed by convex mirrors. (2mks)

SECTION B (55 MARKS)

12. Some plain water waves were produced in a ripple tank. They pass from a region of deep water into a region of shallow water. The figure shows what the waves look like from above



a. State what happens at the boundary to:

i. The frequency of the waves (1 mark)

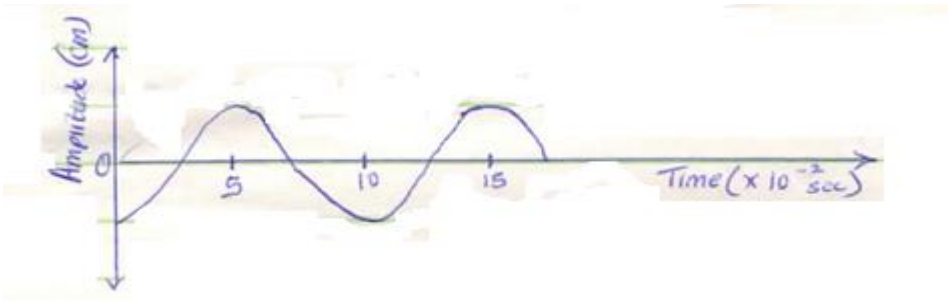
ii. The speed of the waves (1 mark)

iii. The wave length of the waves (1 mark)

b. The waves have a speed of 0.12m/s [in the deep water. Wave crests are 0.08m apart to the deep water. Calculate the frequency of the sources producing the waves. (3 marks)

c. State two differences between a stationary wave and a progressive wave. (2 marks)

d. The wave shown in the figure below has a velocity of $200ms^{-1}$



Determine:

(i) The period T of the wave. (2mks)

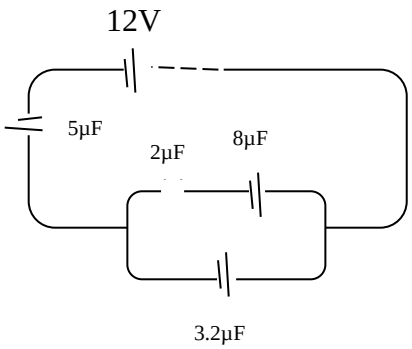
(ii) The frequency of the wave. (2mks)

(iii) The wavelength of the wave. (2mks)

e. State two difference between electromagnetic waves and mechanical waves. (2 marks)

13. (a) State one application of a capacitor. (1 mrk)

(b)The figure shows four capacitors connected to a battery of 12volts



Calculate

i. Effective capacitance (3mks)

ii. Charge on 3.2μF (3 marks)

iii. P.d across 5 µF (2 marks)

iv. The energy stored by 2 µF (2 marks)

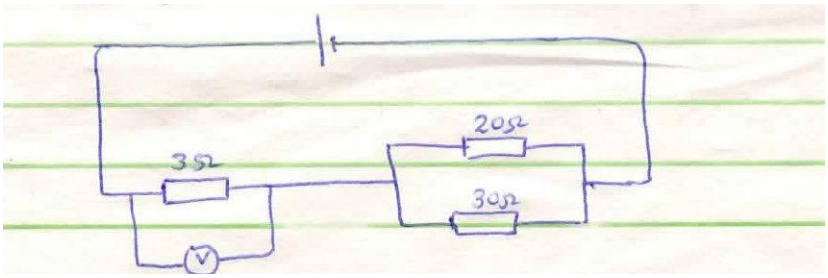
(c) State any two factors that affect capacitance of a conductor. (2 marks)

(d) Why is repulsion the surest way for polarity of a magnet. (1 mark)

14. (a) State Ohm's law. (1mk)

(b) Three resistors 1Ω, 3Ω and 5Ω are connected together in a circuit. Draw a circuit diagram to show an arrangement that would give minimum resistance and determine that resistance. (3mks)

(e) The cell in a figure below has an e.m.f. of 1.8V abd negligible internal resistance.



Determine:

(i) Total resistance in a circuit. (3mks)

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

(iii) Reading of the voltmeter. (3mks)

15. (a) State Snell's law. (1mk)

(b) A coin is placed beneath a transparent block of thickness 10cm and refractive index 1.56. Calculate the vertical displacement of the coin. (3mks)

(c) The speed of green light in a prism is $1.94 \times 10^{8} ms^{-1}$

(i) Determine the refractive index of the prism material. (Speed of light in air = $3.0 \times 10^{8} ms^{-1}$). (3mks)

(ii) Determine the critical angle of the prism material. (3mks)

(d) State two advantages of using optical fibres in communication. (2mks)