

---

**KENYA NATIONAL EXAMINATION COUNCIL**  
**REVISION MOCK EXAMS 2016**  
**TOP NATIONAL SCHOOLS**

**MANG’U HIGH SCHOOL**

**232/1**

**PHYSICS**

**PAPER 2**

**SCHOOLS NET KENYA**

Osiligi House, Opposite KCB, Ground Floor

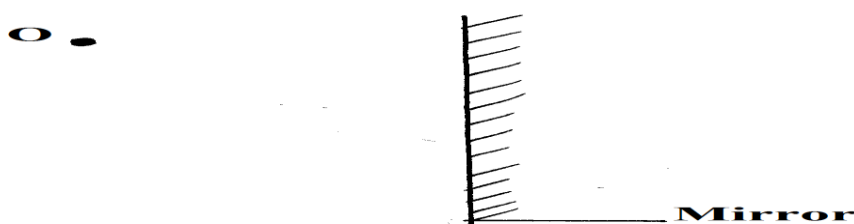
Off Magadi Road, Ongata Rongai | Tel: 0711 88 22 27

E-mail: [infosnkenya@gmail.com](mailto:infosnkenya@gmail.com) | Website: [www.schoolsnetkenya.com](http://www.schoolsnetkenya.com)

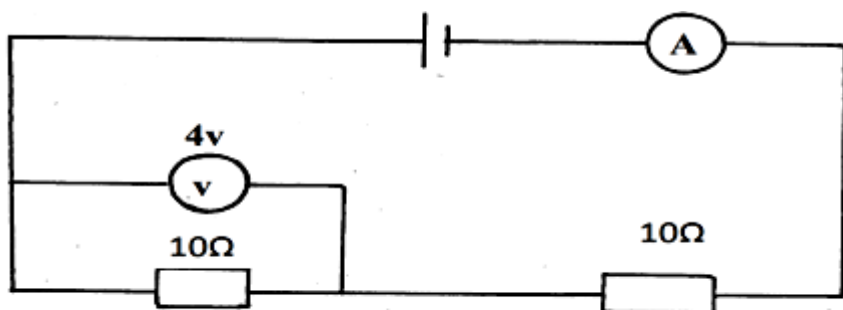
**MANG'U HIGH SCHOOL KCSE TRIAL  
AND PRACTICE EXAM 2016  
Paper 2 (Theory)**

**SECTION A (25MARKS)**

- 1 Using the domain theory, explain how strong heating causes demagnetization.(2mks)
- 2 You are provided with two identical cells. Two lamps and a switch.
  - i) Draw a circuit diagram that would ensure that the bulbs have maximum brightness. (2mks)
  - ii) State **one** disadvantage of using such an arrangement in (i) above to light a whole house with many bulbs. (1mk)
- 3 Calculate the operating current of a heating element rated 3KW,240 volts.(3mks)
- 4 What is local action and how is it minimized in a simple cell. (2mks)
- 5 The figure below shows an object O placed in front of a plane mirror.

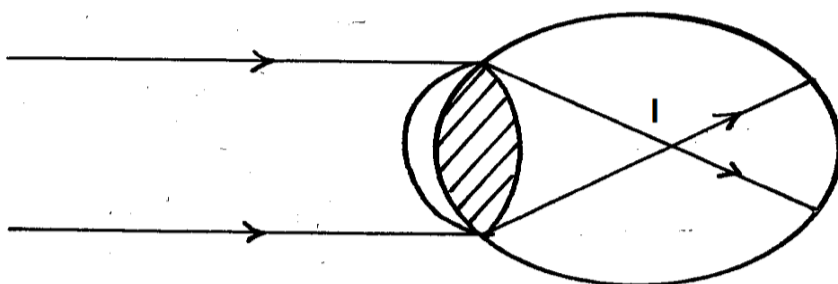


- 6 Use a ray diagram to locate the position of the image. (2mks)



- 7 Determine the ammeter reading. (3mks)

The figure below shows an eye defect.



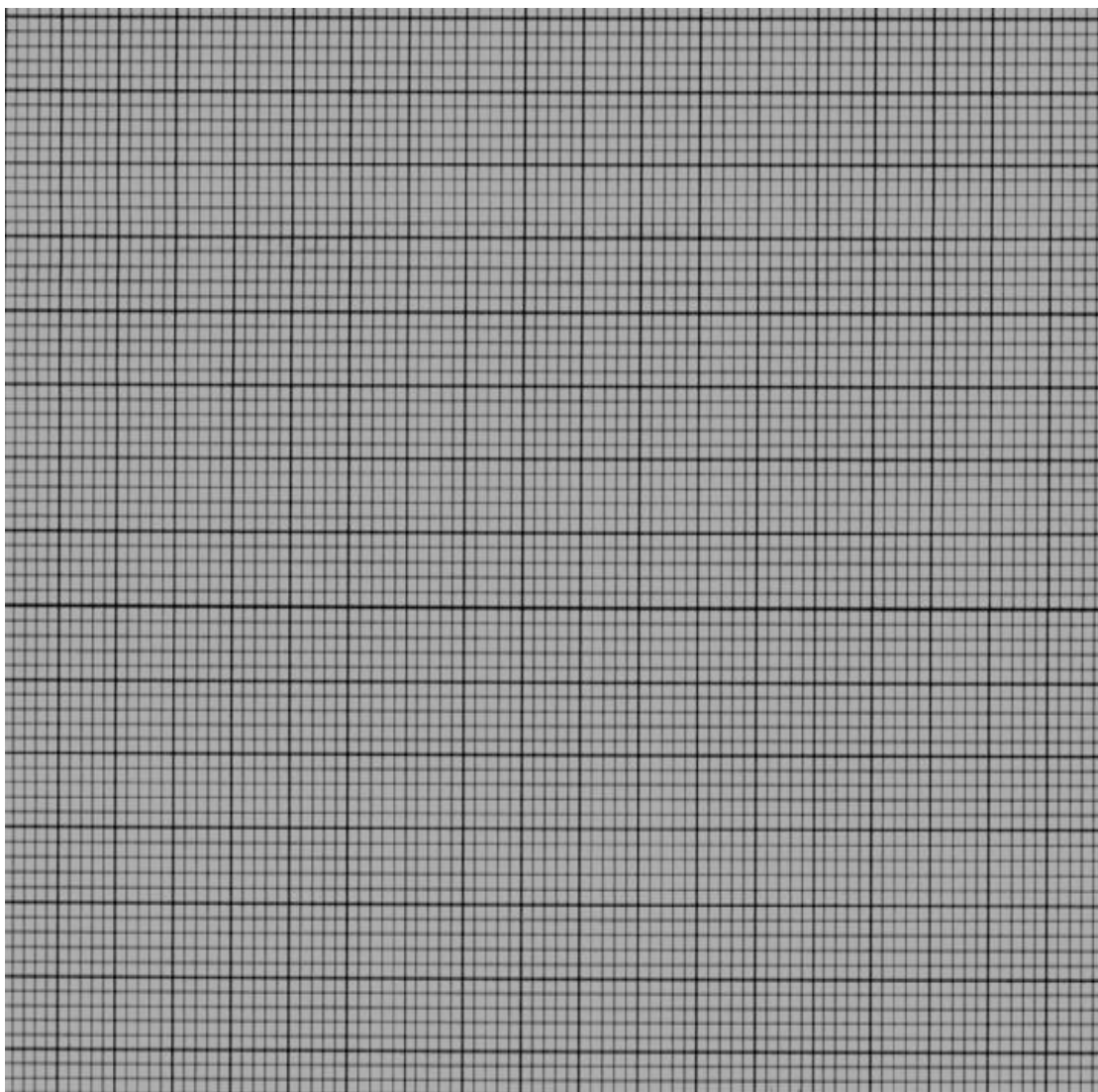
- 8 Name the defect and state how it can be corrected. (2mks)
- 8 Kiss FM broadcasts at a frequency of 100 Hz if the velocity of the radio waves is  $3.0 \times 10^8$  m/s. Calculate the wavelength of radio waves. (2mks)

- 9 The refractive index of turpentine is 1.47, What is the refractive index of the air with respect to turpentine. (2mks)
- 10 State two factors that affect the strength of an electromagnet. (2mks)
- 11 A material of resistivity  $1 \times 10^{-2} \Omega \text{ m}$  has a cross-section area of  $2 \times 10^{-2} \text{ mm}^2$  and length 2m, determine its resistance. (2mks)

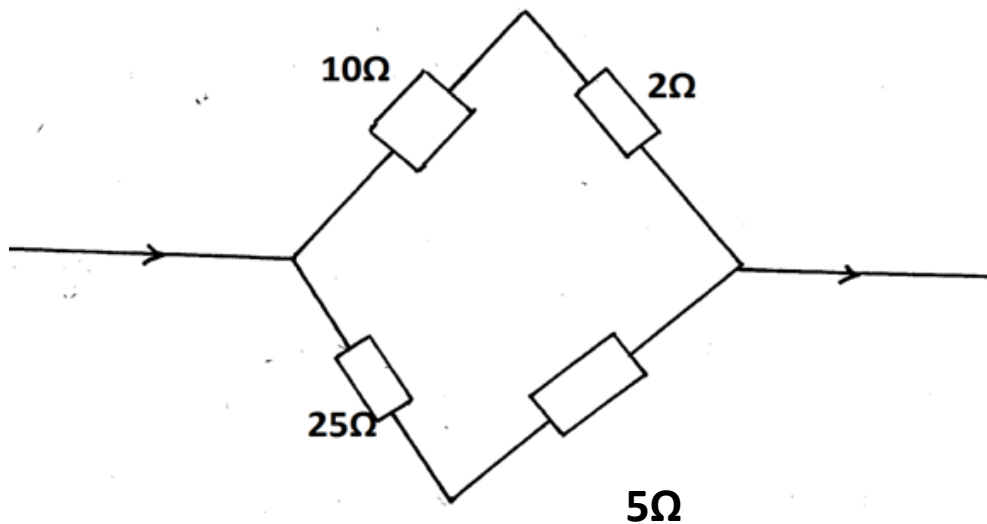
**SECTION B (55MARKS)**

- 12 a) State two factors affecting resistance of a resistor. (2mks)
- b) In an experiment to determine the internal resistance of a cell, the following results were obtained.

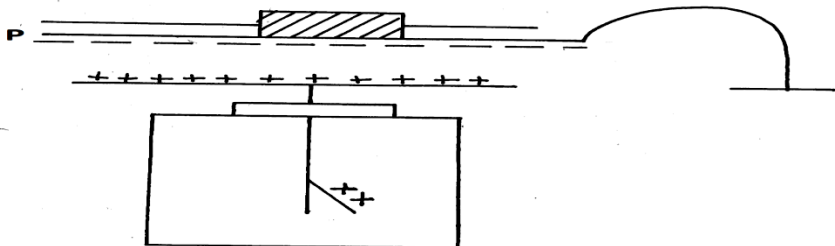
Volts $V \times 10^{-1} \text{ V}$	14	10	8.4	6.0	4.2	2.0	1.0
Current $I \times 10^{-1} \text{ A}$	1.2	6.0	8.0	10.8	13.0	15.6	16.8



- i) Plot the graph of voltage against current on the graph paper provided.
- ii) Use the graph to determine:
- a) e.m.f of the cell. (2mks)
- b) The internal resistance of the cell. (2mks)
- c) The figure shows a set of resistance, determine the effective Resistance (3mks)

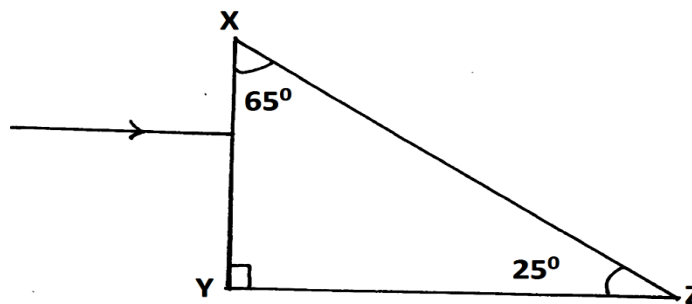


- 13
- Give a reason why a candle flame is blown away when a highly charged rod is brought close to it. (2mks)
  - State one use of a gold leaf electroscope. (1mk)
  - Sketch the electric field pattern around the following point charges.(1mks)
  - Give a reason why it is not advisable to take shelter under a tree especially when it is raining. (1mk)
  - An earthed metal P is placed directly above the plate of a charged electroscope as shown.



State and explain what is observed when:

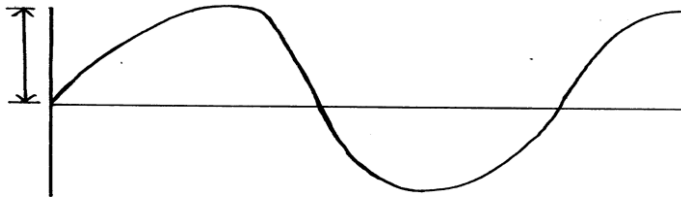
- P is slid slowly sideways. (2mks)
  - P remains fixed in its position but a slab of paraffin was slid slowly between the plates. (2mks)
- 14
- A small object O is placed 30cm away from diverging lens of focal length 10cm.Determine by scale drawing the position and nature of the image on the grid provided. (3mks)
  - The diagram below shows a glass prism and incident ray striking the surface XY.



- Indicate on the diagram the path of the emergent ray. (2mks)
  - Calculate the refractive index of the glass prism given that the critical angle of glass is  $42^\circ$  (3mks)
- c) A concave lens of focal length 15cm forms an image 8cm from the lens. Calculate the object position from the lens. (3mks)

15 The screen of a cathode ray oscilloscope displays the trace shown in the figure below. The ray y – sensitivity is set at 10v/cm and the base set at 0.2ms/cm. Obtain values for:

a) The peak voltage. (1mk)

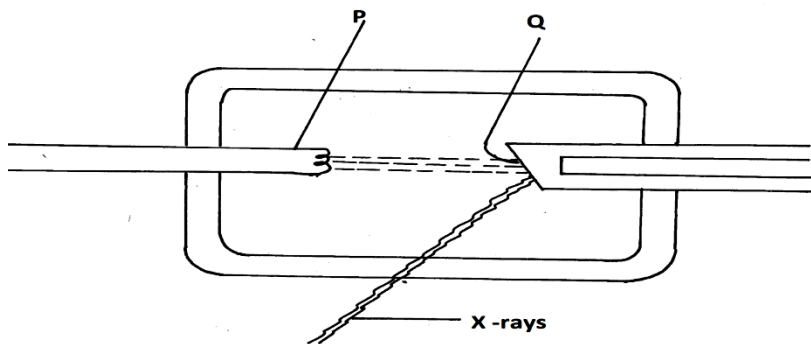


b) The frequency of the alternating signal. (2mks)

c) State two reasons why a c . R -O is advantageous to use as a voltage over ordinary meters (2mks)

d) List two uses of the graphite used in the T.V set. (2mks)

16 a) The diagram below shows part of X – rays tube.



Name parts:

b) i) What is the effect on the wavelength of X – rays if the number of electrons hitting metal target are increased. (1mk)

ii) What is the effect on wavelength of X –rays when pd across the tube is decreased. (1mk)

c) Calculate the maximum velocity of electrons that would produce x-rays of frequency  $8.0 \times 10^8 \text{ Hz}$  if only 20% of kinetic energy is converted to x – rays. (Take planks constant =  $6.63 \times 10^{-34} \text{ JS}$  and mass of electron =  $9.1 \times 10^{-31} \text{ kg}$ ). (3mks)

d) An x-ray tube operating at a potential difference of 50KV has a tube current 20mA. Calculate.

i) The electric power input. (2mks)

ii) The number of electrons hitting the target per second given that  $e = 1.6 \times 10^{-19}$ . (2mks)

iii) The velocity of electrons when they hit the target. (3mks)