NAME……INDEX NO……

CANDIDATE'S SIGN……..DATE…….

SCHOOL…….

232/2
PHYSICS
PAPER 2
THEORY
MAY/JUNE 2014
TIME: 2 HOURS

EKSIKA JOINT EVALUATION TEST.

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

232/2
PHYSICS
PAPER 2
THEORY
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TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES.

1) This paper consists of two sections **A** and **B**.Answer all questions in both the sections in the spaces provided.
2) Mathematical tables and electronic calculators may be used.
3) All your workings must be clearly shown where necessary.

FOR EXAMINERS' USE ONLY.

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
A	1 – 11	25	
B	12	14	
	13	09	
	14	14	
	15	07	
	16	14	
	TOTAL	80	

This paper consists of 11 printed pages.
Candidates should check the question paper to ascertain that all pages are printed as indicated and no questions are missing.

SECTION A (25MARKS)

1 Using the domain theory, explain how strong heating causes demagnetization.(2mks)

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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)

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3 Calculate the operating current of a heating element rated 3KW,240 volts. (3mks)

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4 What is local action and how is it minimized in a simple cell. (2mks)

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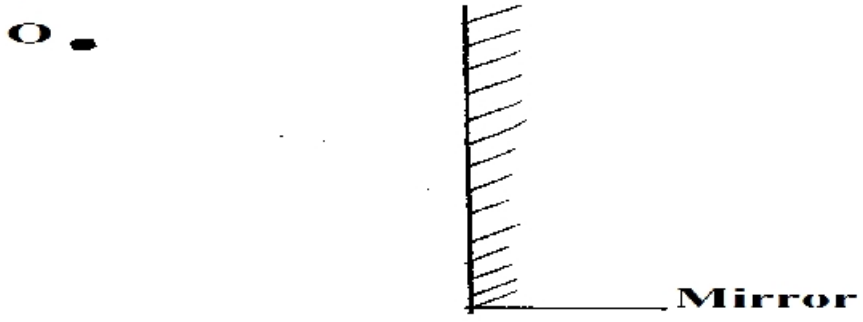
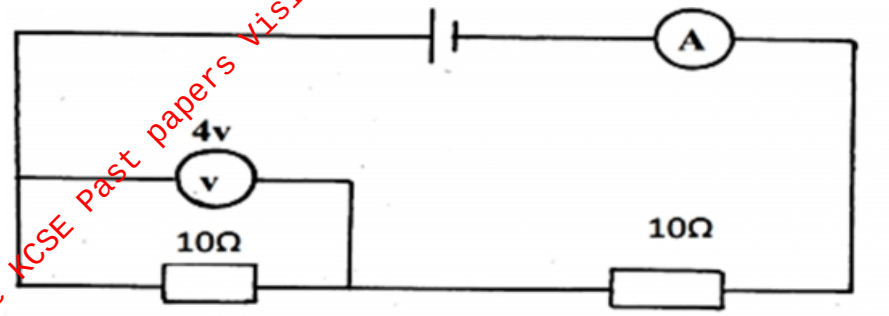
5 The figure below shows an object O placed in front of a plane mirror.



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

6 In the circuit diagram in figure below, the voltmeter reads 4 volts.



Determine the ammeter reading. (3mks)

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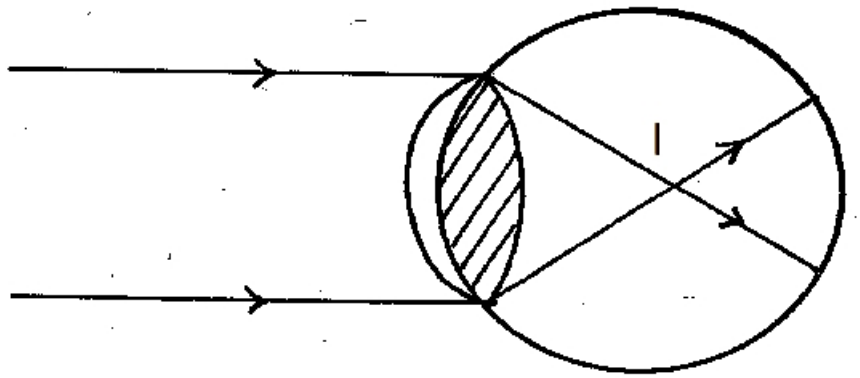
7 The figure below shows an eye defect.



Name the defect and state how it can be corrected. (2mks)

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8 Kiss FM broadcasts at a frequency of 100 H_Z if the velocity of the radio waves is 3.0 x 10^8 m/s.Calculate the wavelength of radio waves. (2mks)

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9 The refractive index of turpentine is 1.47,What is the refractive index of the air with respect to turpentine. (2mks)

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10 State two factors that affect the strength of an electromagnet. (2mks)

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11 A material of resistivity $1x10^{-2}$ Ω m has a cross-section area of $2x10^{-2}$ mm^2 and length 2m, determine its resistance. (2mks)

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SECTION B (55MARKS)

12 a) State two factors affecting resistance of a resistor. (2mks)

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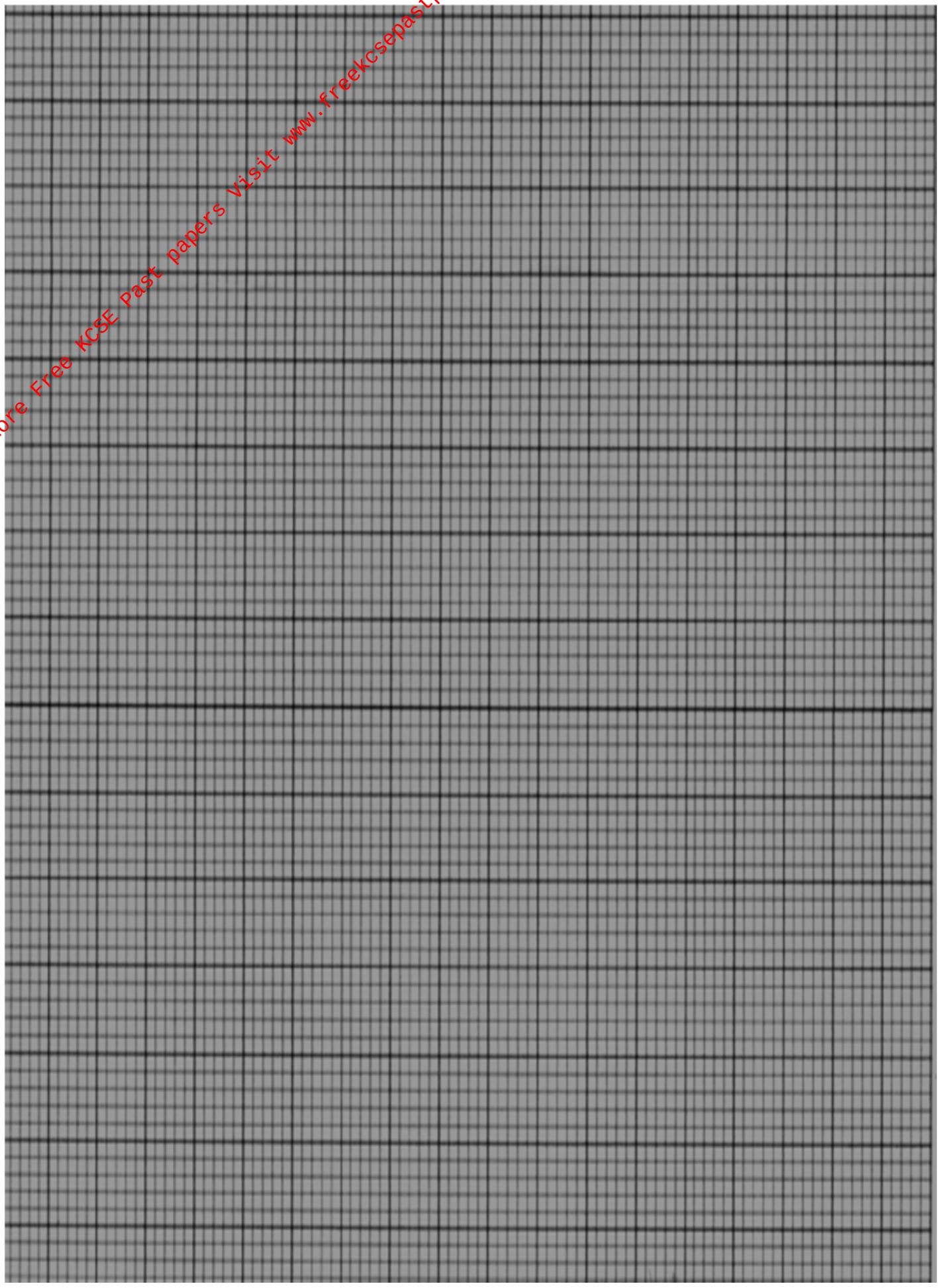
b) In an experiment to determine the internal resistance of a cell, the following results were obtained.

Volts V x 10^{-1} V	14	10	8.4	6.0	4.2	2.0	1.0
Current 1 x 10^{-1} 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)

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b) The internal resistance of the cell. (2mks)

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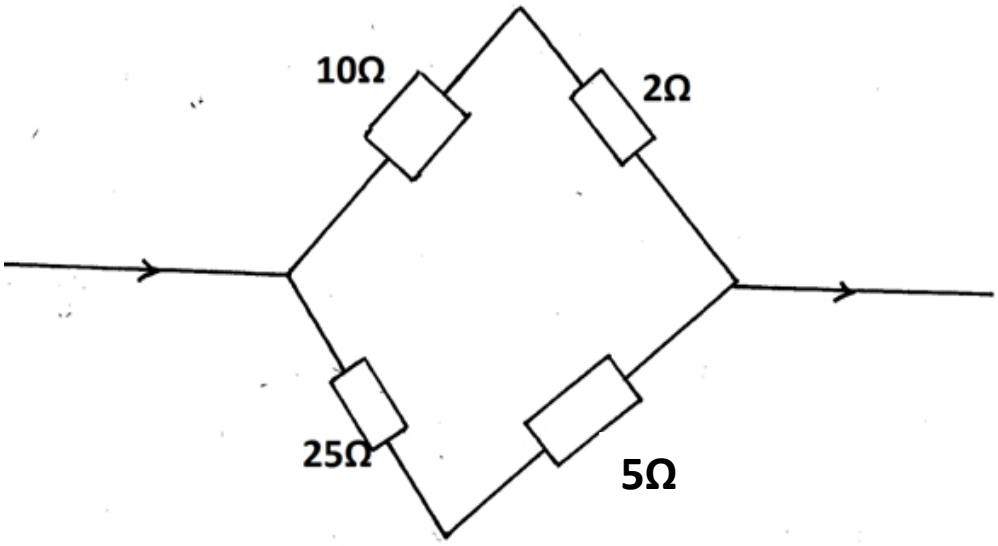
c) The figure shows a set of resistance, determine the effective resistance (3mks)



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13 a) Give a reason why a candle flame is blown away when a highly charged rod is brought close to it. (2mks)

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b) State one use of a gold leaf electroscope. (1mk)

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c) Sketch the electric field pattern around the following point charges.(1mks)

d) Give a reason why it is not advisable to take shelter under a tree especially when it is raining. (1mk)

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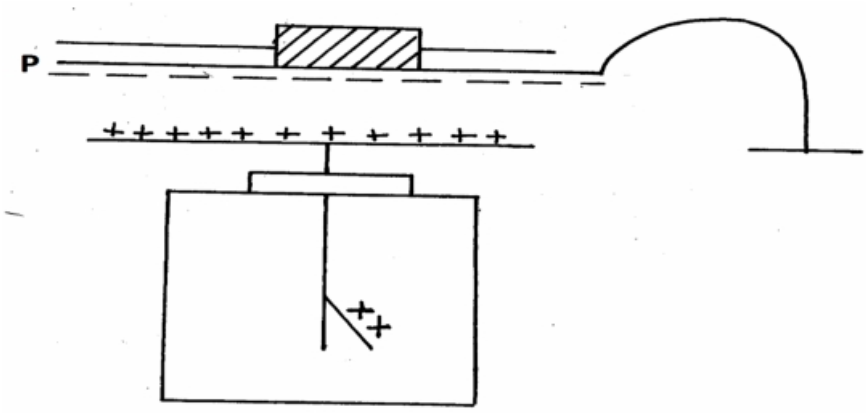
e) An earthed metal P is placed directly above the plate of a charged electroscope as shown.



State and explain what is observed when:

i) P is slid slowly sideways. (2mks)

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ii) P remains fixed in its position but a slab of paraffin was is slid slowly between the plates. (2mks)

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14 a) 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)

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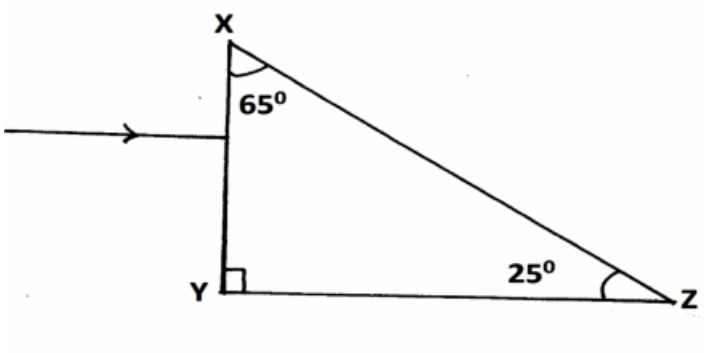
b) The diagram below shows a glass prism and incident ray striking the surface XY.



i) Indicate on the diagram the path of the emergent ray. (2mks)

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ii) Calculate the refractive index of the glass prism given that the critical angle of glass is 42^0 (3mks)

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c) A concave lens of focal length 15cm forms an image 8cm from the lens. Calculate the object position from the lens. (3mks)

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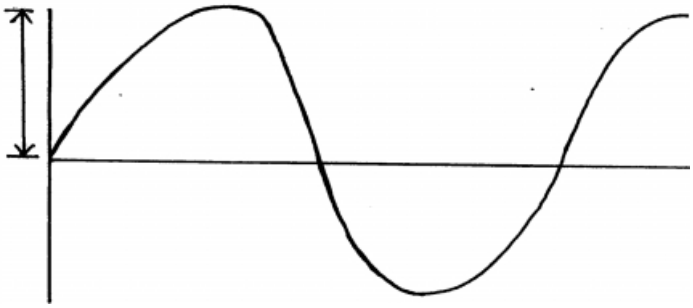
15 The screen of a cathode ray oscilloscope displays the trace shown in the figure belowThe ray y – sensitivity is set at 10v/cm and the base set at 0.2ms/cm.Obtain values for:

a) The peak voltage. (1mk)



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

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

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

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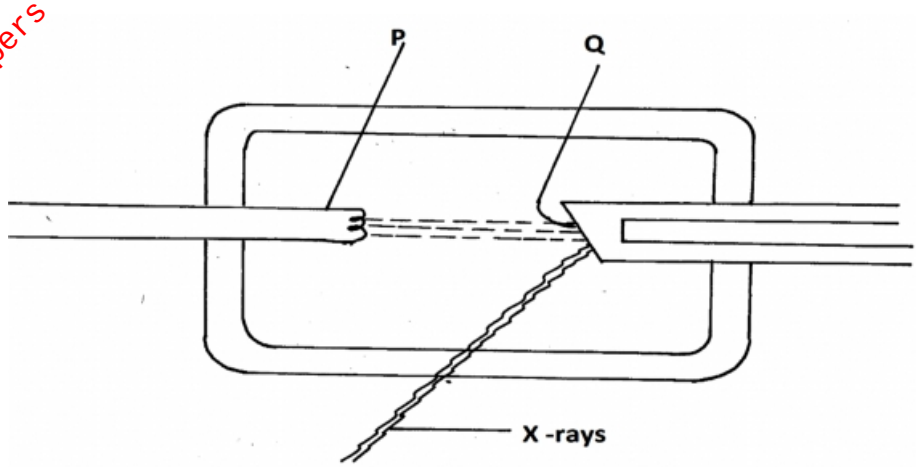
16 a) The diagram below shows part of X – rays tube.



Name parts:

P……..

Q……

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

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

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

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

i) The electric power input. (2mks)

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

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

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