**NAME……………………………….INDEX NUMBER…………........../……..CLASS………**

**232/2 Candidate’s Signature…………………………………….**

**Physics**

**Paper 2 Date…………………………………………………………**

**March /April 2015**

2 hours

 MOKASA JOINT EXAMINATION

Kenya Certificate of Secondary Education

PHYSICS

Paper 2

2 hours

**INSTRUCTIONS TO CANDIDATES**

*Write your* ***name,******index no*** *and* ***class*** *in the spaces provided above.*

***Sign and write the date*** *of examination in the spaces provided above.*

*This paper consists of* ***TWO*** *sections:* ***A*** *and* ***B****.*

*Answer* ***ALL*** *the questions in sections* ***A*** *and* ***B*** *in the spaces provided.*

***ALL*** *working* ***MUST*** *be clearly shown.*

*Non-programmable silent electronic calculators and KNEC mathematical tables may be used.*

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

**For Examiner’s Use Only**

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **Question** | **Maximum Score** | **Candidate’s Score** |
| **A** | **1 – 8** | **25** |  |
| **B** | **9** | **12** |  |
| **10** | **12** |  |
| **11** | **12** |  |
| **12** | **12** |  |
| **13** | **07** |  |
| **Total Score** | **80** |  |

***SECTION A (25 marks)***

1. Describe the changes that can be observed during discharging process of a lead –acid accumulator (2mks)

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1. a) Define power of a lens and give its units (2mks)

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b) An object whose height is 24cm is placed 20cm in front of a diverging lens of focal length 20cm.

 Determine the image distance (3mks)

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1. a) Give one property of sound waves (1mk)

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 b) a person claps his hands at approximately 0.5s intervals in front of a wall 90m away. He notices that each echo produced by the wall coincides with the next clap.

i) Calculate the approximate speed of sound (3mks)

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ii) if the results obtained above were used as a basis for an experimental method to determine the speed of sound, what procedure should be adopted to obtain high accuracy in the timing part of the experiment? (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Identify the magnetic poles A, B, C and D in the diagram below. (2mks)

 A B C D

 A …………………………………………………………………………………

 B …………………………………………………………………………………

 C …………………………………………………………………………………

 D …………………………………………………………………………………

1. The diagram below shows a current carrying conductor placed in a magnetic field.

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N

S

 i)show on the diagram the direction of force on the conductor (1mk)

 ii) if the current through the conductor is reduced, state and explain what happens to the force in (i) above. (2mks)

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1. Gamma, radio, infrared, x-rays are part of the electromagnetic spectrum.

i) Arrange these radiations in order of increasing energy (1mk)

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ii) State how radio waves are detected (1mk)

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1. The diagram below shows waves being diffracted.



What adjustments should be done to obtain the wave form below? (2mks)



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1. The diagram below shows an object placed in front of two mirrors inclined to each other at an angle x

x

 An observer sees five images, determine the value of angle x? (2mks)

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***SECTION B (55 marks)***

1. a) State Snell’s law (1mk)

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b) The figure below shows a ray of light incident on a water-air interface from a source 8m deep.

B

A

8m

Air

Water

52.50

i) Ray A is observed to bend as it enters the air. Give a reason why this occurs (1mks)

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ii) If the refractive index of water is 1.35, calculate the angle of refraction of ray A (3mks)

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iii) Find the critical angle of water (3mks)

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iv) Give a reason why ray B is not travelling out of water (1mk)

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v) a fish is placed at the source of light ray. Calculate the maximum area of view on the surface of water (3mks)

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1. a) define local action (1mk)

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 b) a charge of 4.8C flows through a lamp every second. Calculate the number of electrons involved per second. (3mks) ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

c) Give two differences between a primary and a secondary cell (2mks)

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d) The circuit set up shown below makes a current of 1A to flow through the 4Ω resistor

2Ω

1Ω

4Ω

2Ω

 Calculate;

 i) The current through the resistor (3mks)

2Ω

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 ii) the E.M.F of the cell given that the internal resistance is negligible (3mks)

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1. Show the charge distribution on the hollow conductor shown below if it is positively charged. (1mk)

 Insulator

b. State three factors affecting capacitance of a parallel plate capacitor. (3mks)

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c) The diagram below shows a circuit containing three capacitors.

 C2

 C1

 X Y

 C3

1. Write an expression for effective capacitance between X and Y. (2mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… i) If c1=6µF, c2=4.5µF and c3=5 µF, calculate the charge stored when point XY is connected in series with a battery of 6V (3mks)

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d) The graph below shows the relationship between the voltage drop across a certain capacitor and the charge stored in the capacitor.



2

4

6

8

0

5

10

15

20

Charge (C)

Potential difference (V)

 From the graph calculate the capacitance of the capacitor. (3mks)

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1. a ) State two factors that determine the magnitude of an induced e.m.f in a conductor (2mks)

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 (b ) A Power station has an input of 30kw at a potential difference of 5kv.A transformer with

 a secondary coil of 1000 turns is used to step down the voltage to 1000v for transmission along a grid .Assuming there are no power loses in the transformer .calculate.

(i ) current in the primary coil (3mks)

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(ii ) the number of turns in the primary coil (3mks)

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(iii) The current in the secondary coil (2mks)

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(iv) State which of the coils is thick and why (2mks)

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1. a) Define magnification (1mk)

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b) State two differences between a concave and a convex reflectors (2mks)

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c) a concave mirror of focal length 20 cm forms a real image three times the size of the object. If the object height is 4cm; determine, using graphical method, the:

 ( i)object distance (3mks)

(ii) The image distance (1mk)

