**ELERAI MCK GIELS SECONDARY SCHOOL**

**PHYSICS FORM 2**

**END OF TERM II EXAM 2014**

**Answer all the questions**

1. The diagram below shows a micrometer screw gauge used by a student to measure the thickness of a wire, if the micrometer has a zero error of -0.06mm, what is the actual thickness of the wire (2mks)
2. A spring extends by 2cm when a mass of 40kg is suspended on it. What is the weight required to extend it by 2.5cm (2mks)
3. Define the moment of force (2mks)

The figure below shows a uniform rode of 40cm long, it has a mass of 2 kg pivoted at D. if a 2N is acting at point E and 30N force is passed through frictionless pulley

Find force acting at end (3mks)

1. The figure below shows a marble placed on an inverted bowl
2. State and explain the type of equilibrium the marble is in (2mks)
3. State the two factors that affect stability (2mks)
4. Define pressure and state its SI unit (2mks)

ii) State two factors that affect pressure on a surface (2mks)

iii) A concrete block of mass 50kg rest on surface of the table as shown below

What is the maximum pressure that can be exerted on the bench by the block (3mks)

1. Distinguish between a transverse and longitudinal waves and give example in each case (4mks)

b) Determine the frequency of the wave shown below (3mks)

1. State the characteristics of image formed by a pinhole camera (2mks)

b) What is the effect of the image when the camera is elongated (1mk)

1. An electromagnet is made by winding insulated copper wire on iron

Name the polarities of A and B (2mks)

b) State three changes that could be made to increase the strength of the electromagnet (3mks)

c) Two pins are hanging from a magnet as shown in the diagram below

Explain why the nails on the magnet don’t hang vertically down wards (2mks)

d) Sketch the magnetic field pattern for the arrangement below

e) State two application of magnet (2mks)

1. State and explain one advantage and disadvantage of using convex mirror as a driving mirror (2mks)

b)a convex mirror and an illuminated object are used to produce a sharp image of the object on a screan. The object distances and image distance are give below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Object distance cm | 80 | 26.67 | 22.4 | 20.57 | 19.55 |
| Image distance cm | 20 | 40 | 56 | 72 | 88 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Complete the table (2mks)

Plot a graph of 1/u against 1/v (5mks)

Determine the value of 1/f from the graph (3mks)

Use the graph to determine the image distance when the object distance is 45 (3mks)

Define the following terms (6mks)

1. Principal focus
2. Centre of curvature
3. Focal length
4. In an experiment to estimate the size of molecule of volume 0.12mm3 was placed on a clean water surface. The oil spread into a patch of area 6.0 x 104mm2. Estimate the size of molecule of olive (2mks)

b) State two assumption made when carrying out this experiment (2mks)

c) Express each of the following in standard (3mks)

0.000009047

0.087

2670

1. State the instrument which be suitable for taking the following measurements
2. Perimeter of class room
3. Thickness of a razor blade
4. Diameter of boiling tube
5. Length of your desk
6. Some water was poured into two identical test tube, one painted black and the other one polished. The apparatus were set up and left in the sun for sometime

State and explain which thermometer records higher reading after 20 minutes. Give a reasons for your answer (2mks)

b) The set up below was to demonstrate expansion in gasses

a) What is absolute zero temperature (2mks)

b) Convert each of the following temperature in Kelvin

O0C

-1230C

250C

1. Convert each of following from kelvin 0C (6mks)

1k

350k

100k

1. State three properties of a liquid that is suitable for use in thermometer (3mks)

1. In air salon a plane mirror is suspended using and makes an angle of 350with the wall as shown below

A ray of light strikes the mirror horizontally. Calculate between the horizontal and reflect ray (2mks)

1. Define current and state its SI units (2mks)

b) Charge of 180 columbs flows through a lamp every minute. Calculate the current flowing through the lamp (3mks)

c) Explain why lights in a house are wired in parallel and not in series (2mks)

1. Explain the following
2. Two thin blankets are warmer than a single thick one
3. A person should crawl close to the door in a smoke filled room