**FORM I**

**PHYSICS**

**END YEAR EXAMINAITON**

**TIME: 2 HOURS**

NAME ------------------------------------------------------------------ CLASS------------- ADM NO ---------------

**INSTRUCTIONS**

* This paper consists of two sections A and B
* Attempt all the question in each section in the spaces provided after every question
* All working must be clearly shown
* Electronic calculators may be used

**EXAMINER’S USE ONLY**

|  |  |  |  |
| --- | --- | --- | --- |
| **SECTION** | **QUESTION** | **MARKS** | **CANDIDATES SCORE** |
| A | 1. 6 | 25 |  |
| B | 7 | 9 |  |
|  | 8 | 11 |  |
|  | 9 | 8 |  |
|  | 10 | 9 |  |
|  | 11 | 11 |  |
|  | 12 | 7 |  |
|  |  | 80 |  |

**SECTION A**

1.The figure below shows part of a metre rule. What are the readings indicated by arrows P, Q and R.

2.A mixture consists of 40cm3 of water and 60cm3 of liquid X. If the densities of water is 1g/cm3 and that of liquid X is 0.8g/cm3. Calculate the density of the mixture (3mks)

3.The reading on a burette after 55 drops of a liquid have used is 10cm3. If the initial reading was at zero mark, determine the volume of one drop. (2mks)

4.In an experiment to determine the density of sand using a density bottle, the following measurements were recorded:

Mass of empty density bottle = 43.2g

Mass of density bottle full of water = 66.4g

Mass of density bottle with some sand = 67.5g

Mass of density bottle with the sand filled up with water = 82.3g

Use the above data to determine the

a)mass of water that completely filled the bottle (2mks)

b)Volume of water that completely filled the bottle (1mk)

c)Volume of the density bottle (1mk)

d)mass of sand (1mk)

e)mass of water that filled the space above the sand (1mk)

f)volume of sand (3mks)

g)density of the sand (2mks)

5.a)Define volume and give its SI unit. (1mk)

b)Name three laboratory apparatus which can be used to measure the volume of a liquid. (3mks)

6.Express each of the following volumes into m3 (2mks)

1. 3 litres
2. 18,000cm3

**SECTION B**

7. a)Name two forces that determine the shape of liquid drop on a solid surface. (2mks)

b)A butcher has a beam balance of masses 0.5kg and 2kg. How would he measure 1.5kg of meat on the balance at once. (1mk)

c)State two ways of reducing surface tension in water. (2mks)

d)A solid weighs 16.5N on the surface of the moon. The force of gravity on the moon is 1.7N/kg. Determine the weight of the body on earth. Given that the earth’s gravitation pull is 10N/kg. (3mks)

e)The figure below shows a body being acted upon by two forces F1 and F3.

Draw a diagram with the force F3 that has the same effect on the body as the two forces. (1mk)

8. a)The height of the mercury column in a barometer at a place is 64cm. What would be the height of a column of paraffin in barometer at the same place? (Density of mercury = 13600 kg/m3, Density of paraffin = 800 kg/m3) (3mks)

b)The total weight of a car with passengers is 25,000N. The area of contact of each of the four tyres with the ground is 0.025m2. Determine the minimum car tyre pressure. (3mks)

c) In the figure below, piston A has diameter of 28cm while B has diameter of 560cm. If a force of 154N is exerted of Piston A, calculate the force exerted by piston B.

d)State two properties of the fluid which should be used as a hydraulic brake fluid. (2mks)

9.a)In the Brownian motion experiment, smoke particles are observed to move randomly. Explain this observation. (2mks)

b)State the reason why it is easier to separate water into drops that to separate a solid into smaller pieces.

(1mk)

c)A bottle containing a smelling gas is opened at the front bench of a classroom. State the reason why the gas is detected throughout the room. (1mk)

d)An experiment was set as shown below.

State and explain the observation after sometime. (2mks)

e)Using a diagram differentiate between a solid and a gas in terms of intermolecular distances.

10.a)State two reasons for not using water as a thermometric liquid. (2mks)

b)A clinical thermometer has a constriction in the bore just above the bulb. What the function of the constriction. (1mk)

c. i)The figure below show a bimetallic strip

State and explain what would be observed when the bimetallic strip is heated strongly.

ii)State two uses of the bimetallic strip (2mks)

d)When a liquid is heated in a flask, its level at first falls then rises. Explain this observation. (2mks)

11. a)Name two variables that must be made constant in an experiment for comparing thermal conductivity of different metal rods. (2mks)

b)An experiment was set as shown below.

i)State what was observed after sometime (1mk)

ii)Explain the observation in (i) above (1mk)

ii)What is the purpose of the wire gauze in this experiment (1mk)

c)Using well labeled diagram, differentiate sea breeze and land breeze. (4mks)

d)State how heat loss through conduction and radiation is minimized in a thermos flask.. (2mks)

12 a)What property of light is suggested by the formation of shadows. (1mk)

b)Distinguish between luminious and non-luminous objects giving an example of each. (3mks)

c)State the effect on the image of the pin-hole camera when:-

i)The camera is moved near to the object

ii)When the pin-hole is enlarged (2mks)

d)Define magnification