Name……………………………………........................................ Adm………………...................

Signature…………………………..........…................................Date:

KENYA CERTIFICATE OF SECONDARY EDUCATION (K.C.S.E)

FORM THREE

**232/1**

**PHYSICS**

**(2 Hours)**

**JAN/FEB 2019**

**INSTRUCTIONS**.

.Write your name admission number and signature in the spaces provided.

.All working must be clearly shown where necessary.

.Answer all the question in both sections A and B in the spaces provided.

.Mathematical tables and electronic calculators may be used.

.Take:g=10N/kg

d=water density=1000kg/m3

For Examiner’s Use Only

|  |  |  |
| --- | --- | --- |
| Question | Maximum score | Candidate’s score |
| 1-5 | 25 |  |
| 6 | 10 |  |
| 7 | 11 |  |
| 8 | 13 |  |
| 9 | 11 |  |
| 10 | 10 |  |
| Total | 80 |  |

1. a) What reading is indicated by the part of the micrometre screw gauge shown.(2mks)

b) What would the reading be, if it has a zero error of -0.04 mm.(2mks)

2. a) State the laws of light reflection.(2mks) i)………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….

ii)…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

b) Describe any two evidences showing that light travels in a straight line.(2mks) i)…………………………………………………………………………………………………………………………………………………………………………………………………

ii)…………………………………………………………………………………………………………………………………………………………………………………

3. a) Explain the following observations:

i) Rain drops falling freely in air are spherical.(1mk)

ii) Water spreads easily on glass dipped in soap solution.(1mk)

b) i) Define surface tension.(1mk)

ii) Explain the cause of surface tension.(2mks)

4. a) State Pascal’s principle.(1mk)

b) In the space below, draw a fully labelled diagram of a hydraulic press.(2mks)

c) A typical hydraulic press has a force piston of area 0.01m2 and load piston area 0.5m2.If a force of 2N is applied, what load is lifted?(3mks)

5. a) State the difference between density and relative density.(1mk)

b) The following is a drawing of a relative density bottle.

1. State two precautions taken on using it.(2mks)
2. The mass of a relative density bottle is 20g when empty,70g when full of water and 95g full of another liquid Determine the density of the liquid X.(3mks)

**Section B(55mks)**

**Answer all the questions in the spaces provided.**

6.A measuring cylinder contains 32g of some sugar at the bottom and 56.4g of paraffin oil(of density 0.8g/cm3) above the sugar. If the total volume of the substances in the cylinder is 90.5cm3,

a) draw an illustration of the cylinder and its contents.(2mks)

b) Calculate

i) the volume of the oil.(2mks)

1. the volume of the sugar.(2mks)
2. the density of the sugar.(2mks)
3. the density of the mixture.(2mks)

7. a) State three properties of a liquid that is suitable for use as a thermometric liquid.(3mks) i)………………………………………………………………………………………………………………………..

ii)………………………………………………………………………………………………………………………

iii)…………………………………………………………………………………………………………………………

b) How the performance of a thermometer improved by use of the following:

i) a thin glass bulb? (1mk)

ii)a thick glass stem?(1mk)

iii)a thin capillary bore?(1mk)

iv)a constriction?(1mk)

c) When marking the fixed points on a thermometer, it is observed that at 00C, the mercury thread length is 1 cm and 6 cm at 1000C. What temperature would correspond to a length of 4cm?(4mks)

8. a) State the laws of equilibrium.(2mks)

i)………………………………………………………………………………………………………….

ii)……………………………………………………………………………………………………………………..

b) A metre rule is at balance under the action of forces as shown:

1. Determine the magnitude of the forces F1 and F2.(6mks)

c) State the meaning of :

i) centre of gravity(1mk)

1. moment of force (1mk)

d) State the states of equilibrium(3mks)

i)…………………………………………………..

ii)……………………………………………….

iii)……………………………………………………

9. a)The following graph represents motion.

State what happens at

i) O(1mk)

ii)O-A(1mk)

iii)C-D(1mk)

b) A car travelling at 10ms-1 decelerates uniformly at 2ms-2.Calculate

i) the time it takes to come to rest.(4mks)

1. the distance travelled in this time.(4mks)

10.To estimate the radius of an oil molecule,200 identical drops of oil(density 800kg/m3) were released from a burette. The burette reading changed from 0.0cm3 to 0.5 cm3.

One of the drops spread into a patch of area 0.2m2 on water surface sprinkled with chalk dust.

1. What is the purpose of the chalk dust?(1mk)
2. Determine
3. the volume of each oil drop in m3.(2mks)
4. the mass of each oil drop in kg.(2mks)
5. i) What is the thickness of the oil patch?(2mks)

ii)Estimate the radius of the oil molecule.(1mks)

d)State the assumptions used in the experiment.(2mks)