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**PHYSICS**

**PAPER 1**

**JULY/AUGUST 2019**

**BUURI EAST STANDARDS**

***Kenya Certificate of Secondary Education***

**MARKING SCHEME**

1. Mass of water = 80-55

 = 25g√

 Vol of water = mass = 25 =25cm3 = volume of the bottle

 P 1

Mass of liquid x = 70-55

 = 15g

Density of x = mass of x √

 Vol of the density of the

 = 15g = 0.6g/cm3√ or 600kg/m3√

 25cm3

2. C.M=A.C.M

 3x 0.5 = QxY

 1.5 = Q Y…….(i)√

 Downward forces = upwards force.

 3+Q = 4N ……….. (ii)

 Q = 4-3

 = 1N.√

= 1.5=1 x Y

1.5 =Y√

= Y=1.5M

Q=1N√

3. By reducing temperature (any one) w.t.t.e

 By removing impurities

4. Brownian motion is the movement of molecules in a continuous random motion while diffusion is the movement of particles from the region of high concentration to a region of low concentration. (Deny a mark if the two definitions are not correct)

5. i) The experiment was done within the elastic limit, since the extension, produced is directly proportional to the force applied.

 ii) k= F = 20

 e 0.05 = 4000 N/M

6. The stability of a body increase with increase in the Area of the base.

7. When the gas tap is opened, gas flows at√ high speed creating a low pressure √above the nozzle. The higher atmospheric√ pressure on the outside pushes air in and gas burns.

8. Paraffin is less dense than√ water hence occupies a longer column to balance pressure due to water column.

9. On heating, the glass flask absorbs heat energy faster that the liquids and expands increasing√ its volume thus the drop; but liquid expands more that the solids whereby the liquids on absorbing heat occupies more space and hence the rise.

10. a) Thin bulb

 b) Narrow capillary bore

11. i) Increasing the speed of rotation of the mass M√.

 ii) Reducing the radius of the circular path any one.

12. for 0.01 s

 F= m(v-u)

t

= 0.015 (40-0)

 0.01

 = 600N√

For 0.5 s

F= m (v-u)

 t

=0.15(40-0)

0.5√

=12N.

13. i) Gas that obeys all gas√ laws perfectly.

ii) By changing pressure slowly√ or allowing gas to go back to the original temperature after the change.

ii) k = slope√

(0, 0) and (4.0 x 106, 3.25 x 105)

K= y = 3.25 x 105 - 0

 4.0 x106-0

 = 0.081125 NM.√

iii) Work done on the gas.√

iv) Dry gas should be used.

 Make small changes in temperature.

c) V1 = V2√ OR P1V1 = P2V2 whereby P1 =P2

 T1  T2 T1 T2

 = V2 = V1T2 T1=37+273=310K.√

 T1 T2 = 67+273=340K.

= 400 x 340

 310√

 = 4387.1 liters √

14. a) For a system of colliding bodies the total linear momentum remains constant provided no√ external forces act.

b) Elastic collision on occurrence both momentum and kinetic energy are conserved while in elastic collision on occurrence only momentum√ is conserved.

c) Ft=m (v-u) √

=78 x0.30 = 0.2 (v-0)√

= 0.2v = 78 x 0.3

 0.2 0.2

V= 117m/s√

d) The thick soft mattress increases the stopping√ time which reduces the rate of change√ of momentum.

e) i) s=ut+1/2gt2

75=0xt +1/2 x10 t2

T2=15√

T=15

= 3.873s√

ii) R=ut

80=u x3.873

U=80

 15√

=20.66m/s√

15. a) Displacement = average velocity x time

 = (v+u) x t √

 2

 But t=v-u√

 A

 S= (v+u) x (v-u)

 2 a

=(v+u) (v-u)√

 2a

V2 = u2 +2as

b) A body moved with uniform decreasing velocity for 5 seconds√ and then reversed with a uniform increasing velocity for another 5 seconds.√

c) i) the centripetal force acting on water in a vertices position is greater than the weight of water in the pail.

ii) T=mv2√

 r

81=5x v2√

 0.5

 V=2.846ms-1

iii) Award if straight line is drawn using a ruler and shows direction.

16. a) i) Surface area of the cup.√

 ii) Wind /air current/drought present√ any two

 iii) Temperature of the surrounding.√

b) The amount of heat required to convert a unit mass of a substance from the solid state to the liquid state without change in temperature.

c) i) 156g-(80+70)

 156g – 150g

 =6g√

ii) 70 x 25 x 4200√ + 80 x 25 x 390

 1000 1000

7350 +780

 8130j√

iii) (6x L) + 6√ x 4200 x 70)

 1000 1000

= 0.006L+ 1764√

iv) 8130 = 1764 +0.006L√

6366 = 0.006L

 0.006

L=1,061,000j/kg√

17. i) mass = volxp

 = (4 x 10) x 1.5

 = 60g

ii) vol. of water displaced

 4 x 7.5 = 30 cm3

Weight of water displaced

30 x 1050√ x 10

1000000

= 0.315 N.√

iii) Reading of the spring balance

= 0.6 – 0.315√

=0.285 N.√

IV) When the rod is wholly immersed vol displaced = 40cm3

 Weight of liquid displaced √

1050 x 40 x10 = 0.42

1000000

Reading of the spring balance.

0.6 – 0.42√

= 0.18N.√

b) Water increases in volume on solidifying while benzene reduces in√ volume /ice is√ less dense than liquid water while solid benzene is √denser than liquid benzene.