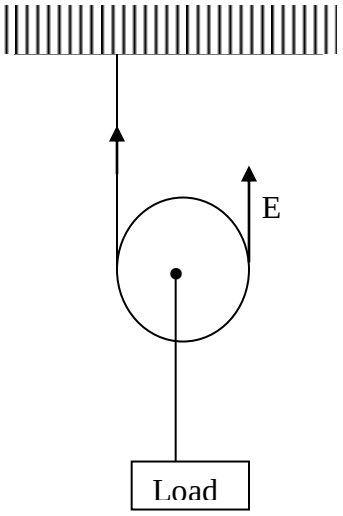
NYANDARUA WEST DISTRICT JOINT EVALUATION TEST
MARKING SCHEME
PHYSICS 232/1
JULY/AUGUST 2018
SECTION A (25 MARKS)

(1) Difference in expansion rates of materials√

2. (a) By strongly illuminating a suspension of pollen grains in water/dust particles in air or smoke cell√

(b) A body continues in its state of rest or motion with uniform velocity unless acted upon by an external force √√

3.

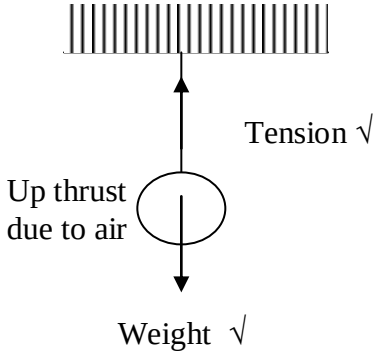


4. R.D= $\frac{\text{weight of an object}}{\text{Weight of equal volume of water}}$ √

$= \frac{2.6N}{(2.6 - 2.2)N}$

$=6.5$√

5.

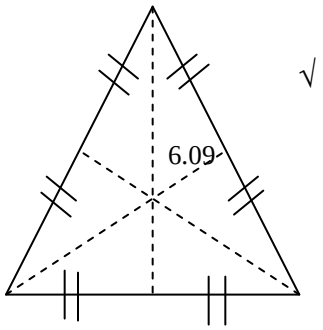


6. -The angle to which the bob is deflected.
-The larger the angle the higher the velocity at the lowest position, hence the greater arising from centripetal force √

7. (a) AT the same level as O in the right limb√

(b) $\frac{P_1}{P_2} = \frac{I_2}{I_1} = \frac{16-8}{26-8} = 0.44$√

8. The phenomenon in which crystals break/fracture along specific planes to yield fresh smooth surface when hit or subjected to mechanical shock
9. The continuously moving water molecules hit the crystal from all directions causing it to split into the tiny particles of which it consist. The same movement caused the particles to diffuse to all parts of the liquid, this rendering the whole volume colored.
10. Perpendicular distance away from the point √
Angle at which the force is applied√
11.



√

12. Surface area to volume ratio√
13. There is pressure difference created as a result of air blown above the paper i.e high velocity , low pressure

SECTION B -55 MARKS

14 (a) Zero (0) –It is because their velocities are still zero/ They are still stationary
(b) $a = {}^{F}/_{M} = \frac{4.0}{0.5} = 8.0 m/s^2$

(c) $V = \frac{0.9 \times 1.5}{0.5} = 2.7$m/s to the right

(d) trolley A, √ because of it moves √with high velocity
(e) Friction force

15. (a) (i) 0,4.5,9.2,13.8,18.5,23.2 cm
(ii) Graph
-Labeling of axes √
-Straight line √
-Location of points √√
-Scale used √

$$\text{Slope} = \frac{23.2-4.5}{5.1} = \frac{18.7}{4} = 4.675$$

$$K = \frac{1}{9.675} = 0.2139 N/cm \text{ or } 21.39 N/m \pm 0.1$$

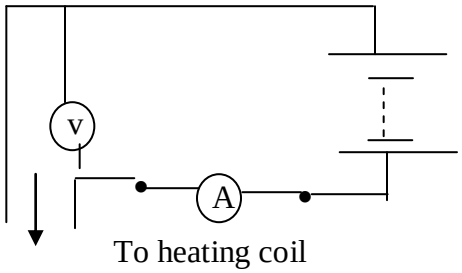
(b) (i) $R_1 = \frac{3.2}{25} = 0.128m$

$$Q = \frac{3.0N}{20} = 0.15m$$

(c) Diameter of spring, length of the spring/thickness of the wire coiled to make the spring
-Diameter of wire used

16. (a)(i) Current, voltage (p.d) mass of water collected temperature of the melt

(ii)



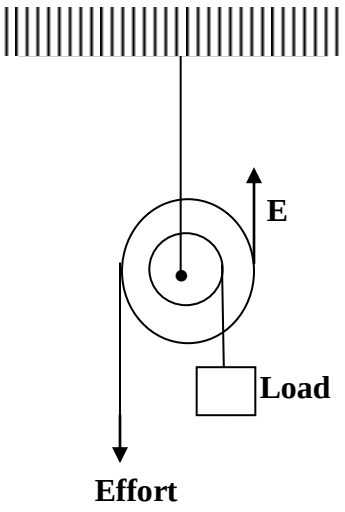
(iii) Switch on the current and start the clock simultaneously
-Record the steady venus current I and P.d.v
-Note the temperature of the melt(should be 0^oC)
-Weighs the melt to obtain its mass m, collected over a known length of time , t
Apply Ivt=mlf
It may not be operating at its optimum conditions of p.d and temperature,T. the heater also absorbs heat
(b) Heat gained =Heat lost
20Lf +20x4.2 /61.5-0) = 100x4.2(90-61.5)
$=340.2Jg^{-1}$
$L=3.402x10^5Jkg^{-1}$
(iv) Heat lost to the surrounding √, absorbed by apparatus

17. (a) (i) The angle covered in radians per second by an object in circular motion
(ii) The force that keeps an object in circular motion
(b)(i) $w=\frac{v}{r}=\frac{8}{28x10^{-2}}=28.57rad/s$

(ii) $a=\frac{v^2}{r}=\frac{8x8}{28x10^{-2}}=228.57m/s^2$

(c) The cylindrical mass was attached to a known weight, T, hanging freely below the hole. The disc was rotated with an increasing angular velocity w, till the hanging weight was steady. The experiment was repeated to obtain other values of w and their corresponding hanging weights

18 (a)(i)



(ii) The principle of moments

(iii) $E = 400 \times \frac{15}{75} \times \frac{100}{80} = 100N$

iv) $P = \frac{\text{Effort} \times \text{distance moved by effort}}{\text{time}}$

$= \frac{100 \times V.R \times 5}{20}$, since $V.R = \frac{75}{5} = 5$

$= 125W$

(v) Lubrication to reduce friction. Use of bigger loads. Use of lighter wheels to reduce the extra weight to be overcome

(b)(i) Smoothness of plane, (ii) angle of inclination

(ii) Smoothnes: Efficiency increases with smoothness since loses due to friction and minimized

Angle –efficiency increases with the angle of inclination since normal reaction decreases and so does friction.

Graph

A GRAPH EXTENSION AGAINST LOAD