KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

MANG'U HIGH SCHOOL
232/1
PHYSICS
PAPER 1
MARKING SCHEME

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MANG'U HIGH SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016

Paper 1

MARKING SCHEME

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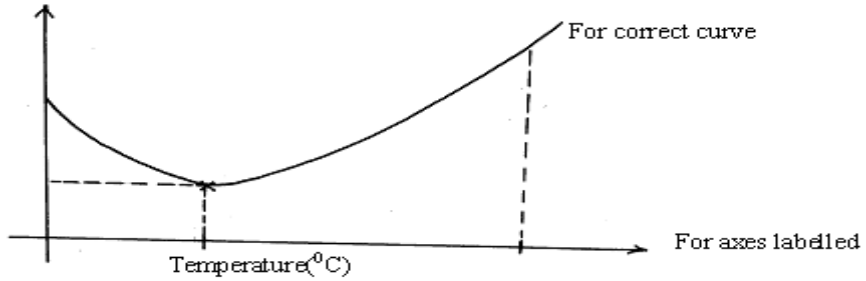
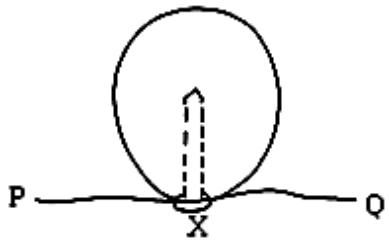
1. Diameter, d= 7.0 + 0.39
   = 7.39 mm + 0.03 mm
   r= $\frac{7.39mm + 0.03}{2}$
   = 3.71 mm
2. Uniformity of expansion of liquid
   -Liquid expansion in comparison to that of glass.
   -Thermal conductivity
   -Wide temperature range (any two 2mks)
3. Concrete mixture and steel have approximately he same linear expansivity.
4. To certain a good height difference that would ensure good/ sufficient pressure difference gradient.
5. Diffusion increase with increase in temperature .Temperature is low in the morning and high during the day.
6. 

7. They neglet the size of the molecules and inter molecular forces. OR any one correct
   At very low temperatures the gases condenses and becomes liquid.
8. 

   The point X is on the plane PQ because the X side is now heavier than other parts.

9. Volume of oil drop = volume of patch (cylinders)

$$3.0\times10^{-6} = 3.142\times\frac{16}{100}\times\frac{16}{100}\times t$$

$$t = \frac{3.0\times10^{-6}\times10^{4}}{16\times16\times3.142}$$

$$t = \frac{3.0\times10^{-6}\times10^{4}}{804.3521}$$

$$t = 3.7297\times10^{-5}m$$

10. $H = \frac{t^2H}{2}$ t

$$\frac{H}{3}=\frac{t^2}{2}$$

$$t=\sqrt{\frac{2H}{3}}=\sqrt{\frac{2\times 0.5}{0.65}}$$

$$T=1.24\,\text{sec}onds$$

$$R=\mu t$$

$$\mu=\frac{R}{t}=\frac{0.65}{1.24}=0.524m/s$$

11.

$$e_1=\frac{40+0.6}{2\times k}=\frac{40.6}{8}$$

$$e_1=5.075m$$

$$e_2=\frac{40}{4}$$

$$=10m$$

$$e_2=e_1+e_2$$

$$=15.075m$$

12. When wind blow across them, it reduces the pressure of the air outside compared to the pressure of air inside causing the building.
13. (261- 273) = -12^0C

SECTION B (55 MARKS)

14. a) When a body is wholly or partly immersed in a fluid it experiences an upthrust which equals to the weight of the fluid displaed.

b) i) $$Mass=\frac{weight}{gravity}$$

$$\frac{7.2N}{10N/kg}$$

$$=0.72kg$$

Volume of metal= volume of water displaced.

Volume = $\frac{mass}{density}$

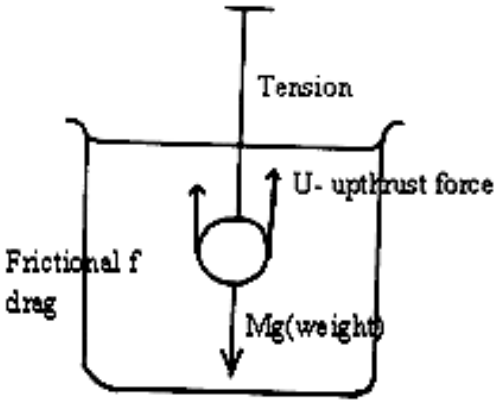
$$\frac{0.72kg}{9000kg/m^3}$$

$$=0.00008m^3]$$

$$=8.0\times 10^{-5}m^3$$

ii) Mass of water displaced
= 8.0 x 10^{-5} m^3 x 1000kg/m^3
= 8.0 x 10^{-2} kg
Weight of water displaced
= 8.0 x 10^{-2} kg x 10v/ kg
= 8.0 x 10^{-1}N
Reading on spring balance
7.2N – 0.8 N
= 6.4N

c)



15. a) - The net force acting on it should be zero
    - The net moment acting on the body should be zero.
    - Upwards forces equals to the downward forces
    - All the antidoclense moments equals to all the clockwise moments.

    b) The force applied her gives the greatest moment and the applied is thus minimum possible.

    c) Moment of force = forces (N) x perpendicular distance (m)
    70N x 0.75m
    52.5 Nm

    d) Homogenious beam/ beam with uniform cross section and density and the beam is balanced/ clockwise movements equals the anticlockwise movements or upward forces equals the downward forces.

    e) Sum of clockwise moments = sum of all anticlockwise moment
    200N x0.5m+600Nx2m = F_Ax1m
    100Nm+1200Nm = F_Ax 1m
    $F_A = \frac{1300\,Nm}{1m}$
    = 1300N acting downwards

16. a) i) velocity ratio (VR)

$$= \frac{dis\tan ce moved by effort}{dis\tan ce moved by load}$$

$$= \frac{2AR}{2Ar}$$

$$= \frac{R}{r}$$

    ii) $VR = \frac{10}{8}$
    = 1.25

$$\text{Efficiency} = \frac{M.A}{V.R} \times 100$$

$$85 = \frac{M.A \times 100}{1.25}$$

$$M.A = \frac{1.25 \times 85}{100}$$

$$but\, M.A = \frac{load}{effort}$$

$$\frac{85 \times 125}{100} = \frac{40}{E}$$

$$E = 40 \times 100$$

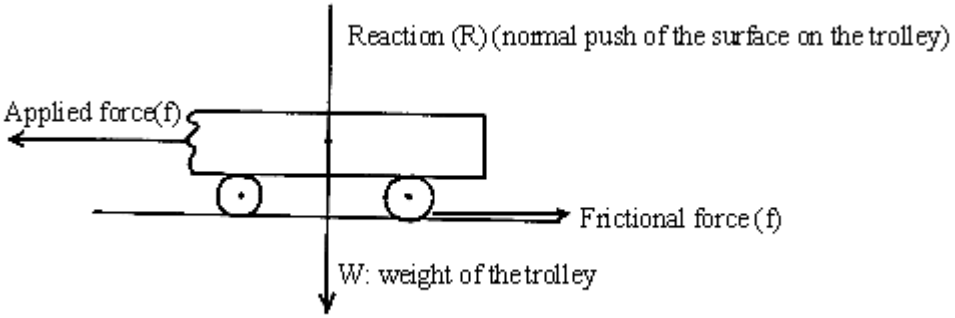
$$85 \times 125$$

$$= 37.65N$$

b) i) Sun, wind tide, waterfalls (any two)

ii) Effort is the force applied to a machine, while is the product of force and distance moved in the direction of the force.

17. a) As the deceleration is caused by fractional force between the object and the surface. Fractional force acts to oppose the motion between the object and the surface.



b)

ii) Acceleration = unbalanced force =ma

Applied force – friction = ma

24 –f = (5.00x3)

F = 9.0N

c) Accelerating force = Applied force – fractional force

= 300-50

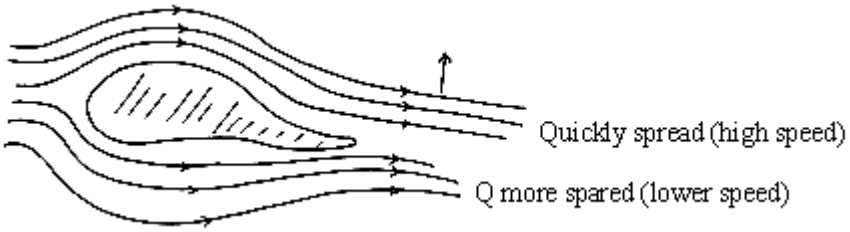
= 250N

F = ma

250 = 500a

a= 0.5 $m5^{-2}$

18. a) A flow in which every particle of fluid passing a point follows the path of the preceding particle and all particles at that point have the same velocity.



b) ii) The air above 2 wing moves faster than the air below. Pressure above wing is reduced. The resulting pressure difference creates a lift.

c) i) $A_1V_1 = A_2V_2$ where A_1 and A_2 are the cross- sectional areas of the pipes and V_1 and V_2 are the speeds of the fluid in the respective pipes.

ii) The gas moves at a high speed inside the barrel. This causes a reduction in pressure inside the barrel. The atmospheric pressure outside the barrel forces in air into the barrel through air hole.

d) $A_1V_1 = A_2V_2$

$\pi(.6^2)V_1 = \pi(.65^2) \times 3m/s$

V1 = 0.19 m/s.