232 /1
PHYSICS
PAPER 1
July/August 2008

LARGER BUNGOMA DISTRICT MOCK EXAMINATION
Kenya Certificate Of Secondary Education 2008

MARKING SCHEME

PHYSICS
Paper 1
July/August 2008

SECTION A: (25 MARKS)

1. Error = -0.09cm; (1mk)
2. Actual diameter = 1.76 - -0.09cm (1mk)
   = 1.85cm; (1mk)
3. The force of adhesion between water and the towel is higher than that between water and the polythene sheet; (1mk)
4. $P_1 V_1 = P_2 V_2$ (at constant temp.) (1mk)
   4 x 1 = 1 x ½ ; (1mk)
   V_2 = 4cm3. (1mk)

5. Shinny surfaces are poor radiator of heat. Less heat is lost in a shinny teapot. (1mk)
6. (i) When water is not pure, it melts at a temperature colder than 0^0C; (1mk)

   (ii) Impurities lower the melting point of water; (1mk)

7. When more air is pumped into the tyre the number of particles colliding with the walls increases; They increase the rate of change in momentum, hence the force per unit area increases; (1mk) (1mk)
8. At every action, there is equal and opposite reaction; (1mk)

9. Pressure in liquids increases with depth ; hence water will enter the ship at a higher rate making it to sink; (1mk) (1mk)

10. Sum of clock wise moments = sun of anti-clockwise moments; (1mk)
    $W \times \left(\sqrt{64 - 4}\right) = 5.5 \times \left(\sqrt{225 - 4}\right)$; ; (2mks)

    $W \times 7.746 = \frac{5.5 \times 14.866}{7.746}$; (1mk)

    $= 10.555\,N$

11. The turning effect (moments) will be smaller ; due to a shorter perpendicular distance of the line of action. Of force applied from the pivot; (1mk) (1mk)
12. Frictional force between the tyre and the road (1mk)
13. (i) Weight (force due to gravity); (1mk)
    (ii) Upthrust or viscous force ; (1mk)
    (iii) upthrust + viscous force = weight
    U + Fr = Mg.; (1mk)
    The drop acquires terminal velocity; (1mk)

SECTION B: (55 MARKS)

14. (a) When the switch is closed the heating coil generates heat which causes the Bimetallic strip to bend upwards; (1mk)
The bulb goes off. After some time strip cool and contact is remade and the bulb lights again; The process is repeat (1mk)
hence for a car flashing unit; (1mk)

(b) The water turns to ice; (1mk)
The sucking of air bubbles through either, causes it to Evaporate quickly, taking its latent heat from the tank and From water; (1mk)

(ii) Domestic refrigerator; (1mk)

(c) $H = ML_f + MCD + MLv$; (2mks)
$= 2 \times 340000 + 2 \times 4200 \times 100 + 2 \times 230000$; (1mk)
$= 680000 + 840{,}000 + 4600000$
$= 6120000J$; (1mk)

15. (a) Velocity ratio is the ratio of distance moved by the effort to the distance moved by the load; (1mk)

(b)i) VR = 4 (No of string supporting the load); (1mk)

(ii) Distance moved by effort = 4m (1mk)
Work done by effort = 200 x 4 ; (1mk)
= 800J; (1mk)

(iii) $\lambda = \frac{MA}{VR} \times 100$; (1mk)

$= \frac{\frac{600}{200}}{4} \times 100 = 75\%$ (2mks)

(c) The car steering wheel; (1mk)
A water tap etc; (1mk)

16. (i) Work done = energy transferred; (1mk)
= 0.15 x 100 x ½ (1mk)
= 7.5 J (1mk)

(ii) Energy transferred = Kinetic energy (1mk)

$7.5 = \frac{1}{2} MV^2$ (1mk)

$V^2 = \frac{2x7.5}{0.2}$

$V = \frac{15}{0.2}$

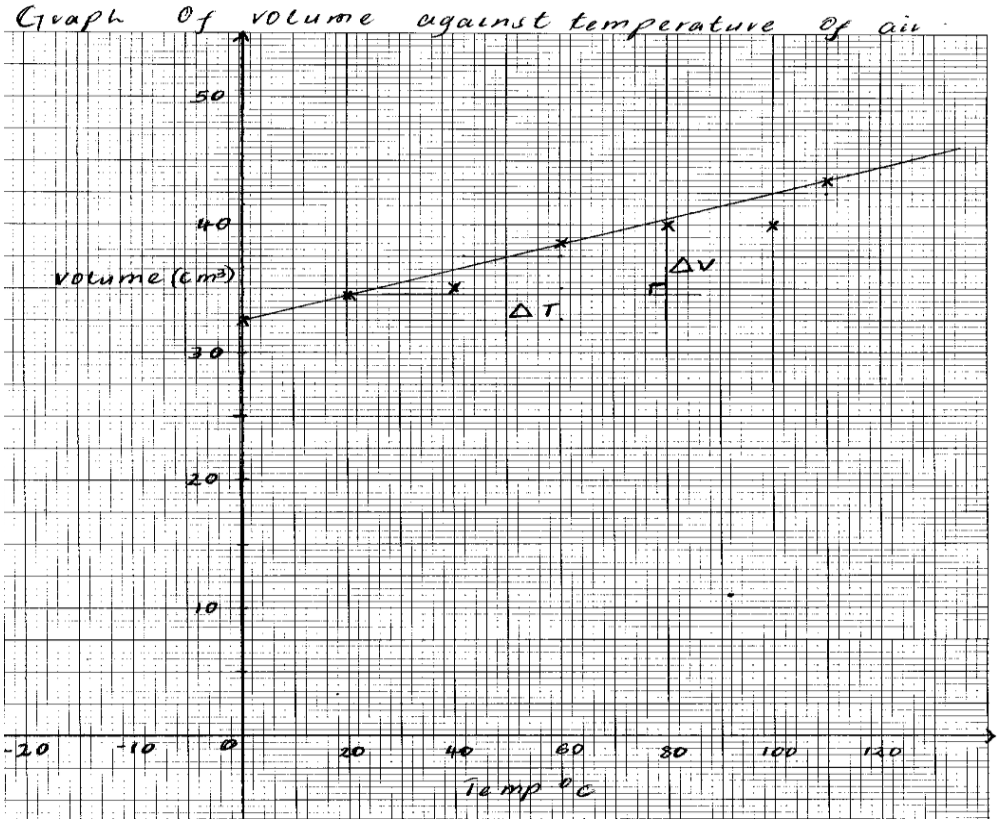
$= 8.667 m/s$ (1mk)

(iii) $u = 8.667 m/s$
$V = 0$
$2as = V^2 - O^2$ (1mk)
$2 \times 40 \times s = 0 - (12.25)$ (1mk)
$S = 3.75m$ (1mk)

(iv) $S = ut + \frac{1}{2} gt^2$; (1mk)
$3.75 = 8.667 \times t + -1/2 \times 10 \times t^2$; (1mk)
$t = \frac{2x8.667}{10}$ (1mk)
$= 1.7334$ sec. (1mk)

17. (a) Is the temperature at which a body is assumed to have zero internal energy / volume; (1mk)

(b) Read gases have molecules with definite volume while idea molecules have no volume; (1mk)
Molecules of real gases white for ideal gas it is assumed There exists no force between then; (1mk)



(c) (i) A – I S – I P – 2 C – 1 (5mks)

(ii) Slope $= \frac{DV}{DT}$ (1mk)

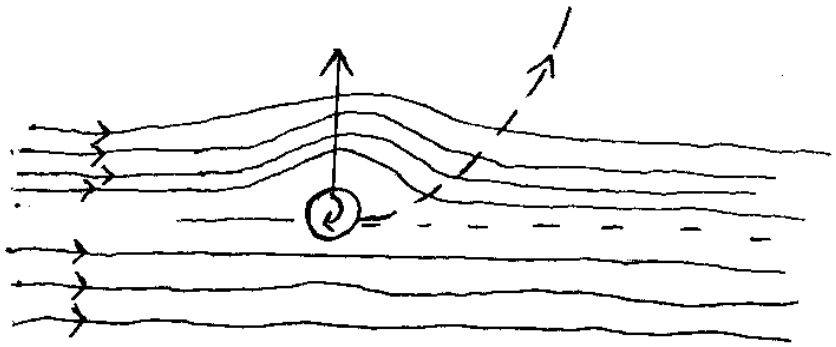
$= \frac{7.5}{68}$ (1mk)

$= 0.1103 \text{ cm3}/^{0}\text{C}$ (1mk)

(iii) Real gases get liquefied before zero volume is reached (1mk)

- The molecules of real gases have definite volume; (1mk)

18. (i)



(ii) Due to spinning the velocity of air above the ball reduces; (1mk)

and hence lower pressure above the ball than pressure below. (1mk)

(b) (i) The boat floated shallowly (1mk)

- The level of the water in the bond dropped (1mk)

(ii) The fisherman displaced less water the body due to (1mk)

Reduced weight of the boat and it content; (1mk)

(c) Weight of the cars = 1000 x 10

= 10000N

Weight of more water displaced

$$= \frac{100000}{10x1000}$$

$= 10m^3$; (1mk)

Volume = Gross section area x h

$$H = \frac{10}{1000}$$

$= 0.01M$ (1mk)

(c) A submarine has flotation tank which are filled with water if required to sink. Its weight is varied to be greater than the upthrust due to water on it (1mk)

When required to float water is pumped out so that it's weight becomes less than the upthrust on it (1mk)