MARKING GUIDE DISTRICT EXAMINATION TERM II

SINIOR TWO

Q1i) true /1Mark

ii)a)true/1, b)true/1 ,c)true./1Marks

Q2.- It is the force that arises between two objects in contact at rest/1mark

The force is the pull of push on anything. It is any cause that can start or stop the motion of the body/1mark

-Density is defined as the mass per unit volume of a substance/1mark

Q3a) A ***lactometer*** is a hydrometer that is used to test the purity of milk. 1mark

A hydrometer can also be used to:

-determine the level of charge in batteries

-determine the level of sugar in some drinks

determine the alcoholic content of drinks

b)Mass./1mark

c)Diameter of object./1mark

d)time/1mark

e)pressure/1mark

Q4)

Mass	**Weight**
It is the quantity of matter in a body./0.5	Pull of gravity on a body./0.5
SI unit is kilogram (kg) 0.5	SI unit is newton (N)/0.5
Constant everywhere /0.5	Changes from place to place /0.5
Scalar quantity /0.5	Vector quantity/0.5
Measured using beam balance. /0.5	Measured using spring balance./0.5

Q5 F=ma /1mark

$345N=m.10m/s^2$ 0.5mark

10m=345 0.5mark m= 34.5kg 0.5 $=34.5*10^2g$ 0.5mark

Q6 i)

$d=\frac{m}{V}$ /1mark $V=3cm*3cm*3cm=27cm^3$ /1mark

Density=$240g/27cm^3=8.9gcm^{-3}$ /2mark

ii)Hydrometer

iii)

Distance	Displacement
Is the total length of the path followed by an object, regardless of the	It is the overall change in position from the starting to the end point.

direction of the motion.	
It is a scalar quantity. It is characterized by the magnitude only.	It is a vector quantity. It has both magnitude and direction.

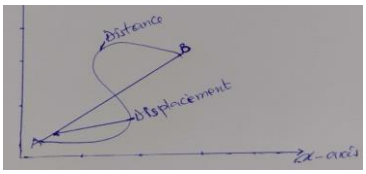
iii) m/s

Q7 .i) A= $0.01m^2$ /1mark

P=F/A/0.5mark

P= 80N:(0.01×4) /1mark =2000Pa /1mark

ii) Pascal (pa) /1mark

Q8 i) 

ii)a) a= $\frac{v-u}{t}$ a= $\frac{\frac{20m}{s}-0m/s}{4s}$=5m/$s^2$

Q9) (a) , the liquid exerts an upward force on the solid./2mark

(a)weight in air =mg /2Mark 4×10=40N /1mark

(b)weight under liquid=weight in air-up thrust due to liquid But up thrust =v ρ g=(4/375)(250)(10)=26.66N /2mark

Apparent weight when in liquid=W air-up thrust /1mark
=40-26.66=13.3N /2marks

Q10). /10marks

James walked a total distance of 4 000 m (2 000 m out and 2 000 m back). d = 4 000 m

Determine his average speed

s =d/t

=4 000 m/3 600 s = 1.11m/s

Determine his average velocity

v =x/t

=0 m/3 600 s

= 0 m · s−1

Q11)

Solution : Given,

$$x = 20t^2$$

Note that x and t are measured in metres and seconds. It means that the constant of proportionality (20) has dimensions ms^{-2}.

We know that the average velocity is given by the relation

$$\overline{v} = \frac{x_2 - x_1}{t_2 - t_1}$$

At $t_1 = 3s$,

$$x_1 = 20 \times (3)^2$$
$$= 20 \times 9 = 180 \text{ m}$$

Similarly, for $t_2 = 4s$

$$x_2 = 20 \times (4)^2$$
$$= 20 \times 16 = 320 \text{ m}$$

$$\therefore \quad \overline{v} = \frac{x_2 - x_1}{t_2 - t_1} = \frac{(320 - 180) \text{ m}}{(4 - 3) \text{ s}} = \frac{140 \text{ m}}{1 \text{ s}} = 140 \text{ ms}^{-1}$$

Hence, average velocity = 140 ms^{-1}.

.Section B

Q12)(a)*If the weight of the object, W, is greater than the up thrust, U, i.e.* the density of the object is greater than the density of the displaced liquid, *the object sinks into the liquid./2marks*

(b)If the weight of the object, is equal to the up thrust, U, i.e. the density of the object is equal to the density of the displaced liquid, *the object remains in equilibrium under the liquid anywhere. /2marks*

(c)If the weight of the object, W, is less than the up thrust ,U, i.e. the density of the object is less than the density of the displaced liquid, *the object floats partially in the liquid /2marks*

ii) Weight of the solid in air =117N / 1mark

Mass of the solid=117/10=11.7kg /1mark

Volume of solid=mass/density=11.7/7800=0.0015m^3 /1mark

Apparent loss of weight in liquid $F = W - \rho .g. V$ */1mark*

=117N-105N=12N=up thrust /1mark

$U = \rho .g .V = mg$ */1mark*

$12 = \rho_{liq} \times 10 \times 0.0015V$ */1mark*

$\rho_{liq} = 800kg / m^3$ /2mark

Q13) i) Power is the rate of doing work. /1Mark

ii) has SI unit of watt,horse power(Hp),J/s.

iii) 5222:746= 7Hp

iv) $P = Fv$

$$F = ma \quad \frac{v}{t}(0.875) \quad \frac{0.620\ \text{m/s}}{21*10^{-3}} \quad 25.8N$$

$P = 25.8\text{N} \times 0.620\text{m/s} = 16 Watts$

Q14)a) Pascal (pa)

b) vector is a anything that has both magnitude and direction while scalar is a quantity having only magnitude not direction.

c) It is the force that arises between two objects in contact at rest while It is the force that arises between two objects in contact when one is sliding relative to another. It is an opposing force.

d)Adhesion: is a property of sticking together (as glue and wood) or the joining surfaces of different composition. The opposite of adhesion is cohesion.

Smoothness: is a property of being smooth of a given surface.

Area of the contact with the surfaces: The higher the area of contact the higher the friction force it is.

e) Non- contact force and contact Force.

Q15)

Transducer	**Transformation of Energy**
Microphone	Sound to electrical
Loudspeaker	Electrical to sound
Battery	Chemical to electrical
Light bulb	Electrical to light

(a)Initial velocity

u=0 Distance

s=1.8m

g=10m/s2

Final velocity, v=?

From $v^2 = u2+2gs$

v=02+2(10)(1.8)=6m/s.

v=6m/s.

(b) $K.E = \frac{1}{2} mv^2 \ \frac{1}{2}(0.150)(6)^2 = 2.7J$

(c)Final velocity v=0

g=-10m/s2

Distance s=1.25m

Initial velocity, u=?

From v2= u2+2gs

02= u2+2(-10)(1.25)

u=5m/s.

The rebound velocity is 5m/s.

(d)K.E on rebound K.E = $^1_2$ mu^2 = $^1_2$ $(0.150)(5)^2$ =1.875*J*

END!!!!!!!!!!!!!!!!!!!!