MARKING SCHEME
PHYSICS
FORM 3 EXAM

1. Differentiate between mass and weight(2MKS)

MASS	WEIGHT
Measured is in Kg	**Measured in Newton**
Mass is constant everywhere	**Weight varies from place to place**
It's a scalar quantity	**Its' a vector quantity**
Measure of quantity of matter	**Measure of pull of gravity**

2. An object weighed 16N on the moon's surface when gravitational field strength is 1.6 N/kg

   i. Calculate the mass in kg.(1mk)

   W=Mg M=W/G 16N/1.6N/Kg =10 Kg

   ii. If the same object is weighed on the earth's surface when g=10N/kg calculate its weight.(2mks)

   W=Mg 10 x10 = 100 N

3. Define pressure and state its SI units.(2mks)

   Pressure is force per unit area. SI unit is N/M^2 or Pascals

4. Explain the following terms. (3mks)

   i. Magnetic field

   It's a region where magnetic effect is felt

   ii. Magnetic saturation

   iii. Neutral point

   Its' a region where magnetic effect is not felt.

5. In an experiment to estimate the size of Molecule of oil it was found that the level of oil in a burette drop from 37.5 cm3 to 40cm3 mark when 100 drops of

oil run out. when one drop of that oil was placed on clear water surface it spread out into a patch of diameter 14cm

Determine the

i. Volume of the oil drop(2mks)

40 -37.5 =2.5 cm^3

100 drops =2.5

1 drop = 2.5cm^3/100

=0.025 cm^3

ii. Area of the patch covered by the oil(2mks)

$$A = \pi r^2$$

$$\frac{22}{7} X7X7 = 154CM2$$

iii. Length of the molecule(2mks)

Length = Volume of oil drop/area of the patch

0.025 cm^3/154cm^2 = 1.6234 x10^{-4}

6. Define the term moment of a force about a point and its SI units.(2mks)

Moment is force multiplied by perpendicular distance.

SI unit is NM

7. A uniform meter rule is balanced by masses 20g and 80 g hung from its ends. Find the position of its pilot.(2mks)

0.8 x y =0.2(100 –y)

0.8y =20 – 0.2y

Y= 20

100 -20 =80

20 cm from 80g or 80cm from 20g mass

8. A water wave travels 2m in five seconds. If the frequency of the wave is 10Hz, calculate:

a) Speed of the wave(2mks)

S=D/5

2/5 =0.4M/S

b) Wave length of the wave.(2mks)

0.4/10 =0.04 m

9. A pupil standing between two parallel cliffs yelled once. She hears one echo after one second and another after 4 seconds

a. If the distance between the cliff is 840 m , calculate the speed of sound in air(3mks)

2 x840/5 =1680/5 =336m/s

b. What is the distance of the pupil from one of the cliffs(2mks)

Let the distance of the cliff be y

T=2d/s

1=2y/336

2y/2=336/2

Y=168m

840-168

=672m

10. Differentiate between streamline flow and turbulent flow? (2mks)

Streamline flow is flow where at a given point, each and every molecule of the fluid travels in the same direction and with the same speed while turbulent flow is a fluid flow characterized by eddies & whirls

11. A pipe has a cross-section area of 49cm2 at one end and cross- sectional area of 16cm2 at the other end. If water gets in the pipe through the wider end with velocity of 7mls. Calculate the velocity of water at harrow end.(3mks)

$A_1V_I = A_2V_2$

49 X 7m/s/16

V2 = 21.44 m/s

12. Differentiate between volume flux and mass flux.(2mks)

Volume flux refers to volume of a fluid passing through a point per unit time while mass flux refers to the mass of a fluid passing through a given section per unit time.

13. State and explain two dangers of Bernoulli's effect.(3mks)

Blowing off the roofs. The air flowing above the roof marks with a high velocity leading to lower pressure. The high atmospheric pressure beneath blows the roof.

Accidents – the two vehicles moving in opposite direction moves with high velocity leading to low pressure btwn the two vehicles. The high atmospheric pressure on the sides pushes the two vehicles.

14. A body moves 3000 meters due east in 40s then 4,000 due north in 60s. calculate.(4mks)

a) Its average speed

3000 m + 4000 m =7000 m

Speed= Distance/Time

7000m/100s

=70 M/S

b) Its average velocity for the whole journey

$$(4000)^2 + 3000^2 = \sqrt{25000000}$$

=5000 m

V= S/T

5000M/100S

50m/s

15. A ball is thrown from the top of cliff 40m height with a horizontal velocity of 20m/s calculate:

(a) The time taken by the ball to strike the ground.(2mks)

U = 20 m/s

G= 10 m/s

Y = 40 m

But h = ½ g+ t^2

40/5 =5t^2 /5

t^2 =8

t =2.828 Seconds

(b) The distance from the foot of the cliff to where the ball strikes the ground.(2mks)

R= u t

20 m/s x2.828 seconds =56.56 meters

(c) The vertical velocity at the time it strikes the ground (take g = 10mls2)(2mks)

v = u + gt

=gt

10 X 2.828

= 28.28 M/S