

GREENLAWNS SCHOOL, WORLI

Terminal Examination - 2016

PHYSICS

STD: IX
Date: 06/10/2016

Marks: 80
Time : 2hrs

Section I
(Attempt all questions of this section)

Question 1

- Is it possible to have an accelerated motion with a constant speed? Name such type of motion. [2]
- What do you understand by clockwise and anticlockwise moment of force? When is it taken positive? [2]
- Define temperature and state its S.I. unit [2]
- Differentiate between thrust and pressure (Any 2 points) [2]
- Define one Pascal. State C.G.S unit of pressure [2]

Question 2

- State the effect of a force applied on a (a) Non-rigid body, (b) rigid body. [2]
- What do you mean by equilibrium of a body? What are the two types of equilibrium? *Marks ??* [2]
 - At what temperature is density of water maximum? [1]
 - Name any one substance other than water that shows anomalous expansion [1]
- Draw a graph to show the variation in density of water with temperature in the temperature range from 0 to 10 degrees [2]
- Why does water not overflow as the ice cube melts in a glass full of water? [2]
- It is easier to lift a heavy stone under water than in air. Explain [2]

Question 3

- A rocket is moving at a constant speed in space by burning its fuel and ejecting out the burnt gases through a nozzle. Answer the following:
 - Is there any change in momentum of the rocket?
 - Is there any force acting on the rocket? [2]
- Why does an egg sink in fresh water but floats in a strong solution of salt? [2]
- What fact about liquid pressure does the following diagram illustrate? [2]

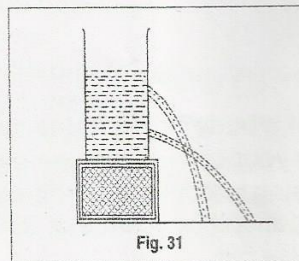
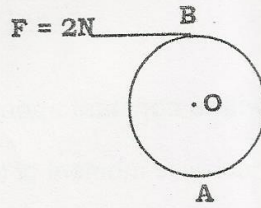


Fig. 31

- How is the barometric height of a simple barometer affected if?
 - Its tube is slightly tilted from vertical
 - A drop of liquid is inserted inside the tube [2]
- What are the two types of force? Give examples of each. [2]

Question 4

- a. A wheel of diameter 2 m is shown in fig with axle at O. A force $F = 2\text{ N}$ is applied at B in the direction shown in figure Calculate the moment of force about i. Centre O, ii. Point A. [2]



- b. Why does nose start bleeding on high altitudes? [2]
c. Draw a neat labelled diagram of hope's apparatus used to demonstrate the anomalous expansion of water [2]
d. How swim bladder helps the fish to rise up in water? [2]
e. State two conditions for a body acted upon by a several forces to be in equilibrium. [2]

Section II

(Attempt any four questions of this section)

Question 5

- a. A uniform meter rule balances horizontally on a knife edge placed at the 58 cm mark when a weight of 20 gf is suspended from one end.
i. Draw a diagram of the arrangement. [3]
ii. What is the weight of the rule? [3]
b. i. State Archimedes principle. [1]
ii. The atmospheric pressure is 75 cm of mercury. Express in Nm^{-2} . Take density of mercury is equal to $13.6 \times 10^3 \text{ kg/m}^3$ and $g = 9.8 \text{ m/s}^2$ [2]
c. i. The stone of hand flour grinder is provided with a handle near its rim. Give a reason for your answer. [2]
ii. What are the factors affecting change in the linear momentum of an object? What is it commonly called as? [2]

Question 6

- a. Define the term 'centre of gravity of a body? On what factor does the position of centre of gravity of a body depend? Explain your answer with an example. [3]
b. Mention three disadvantages of using water as a barometric fluid. [3]
c. i. What is the acceleration produced by a force of 20 N acting on a mass of 5 kg at rest? Find the distance traveled in 5 s. [2]
ii. A ball of mass 100 g moving with a velocity of 20 ms^{-1} is brought to rest in 0.02 s. Find the average force on the ball [2]

Question 7

- a. Define S.I. and C.G.S. unit of force. What is the relationship between them? [3]
- b. What do you mean by anomalous expansion of water? State and explain the any two consequences of it. [3]
- c. A metal cube of side 5 cm and density $9 \times 10^3 \text{ kg/m}^3$ is suspended by a thread so as to be completely immersed in water in a liquid of density $1.2 \times 10^3 \text{ kg/m}^3$ (Take $g = 10 \text{ m/s}^2$). Calculate
- a) Weight of metal cube
 - b) Up thrust
 - c) Apparent weight [4]

Question 8

- a. State the characteristic properties of up thrust [3]
- b. At a sea level, the atmospheric pressure is $1.04 \times 10^5 \text{ Pa}$. Assuming $g = 10 \text{ m/s}^2$ and density of air to be uniform and equal to 1.3 kg/m^3 , find the height of Atmosphere. [3]
- c. i. State the general characteristics of non-contact force? [2]
- ii. State the relationship between the force of mass and acceleration. Draw graphs showing the relationship between.
- a. Acceleration and force for a constant mass [1]
 - b. Acceleration and mass for a constant force [1]

Question 9

- a. Define moment of a force and state its S.I. unit. Derive the relation between S.I. unit and C.G.S. unit of moment [3]
- b. i. A body weighs 300gf in air and 280gf when completely immersed in water. Calculate
- a) The loss in weight of the body [1]
 - b) The up thrust on the body [1]
- ii. State the principle of floatation. [1]
- c. What do the following indicate in a barometer regarding weather?
- i) Gradual fall in the mercury level
 - ii) Sudden fall in the mercury level
 - iii) No abrupt change in mercury level
 - iv) Gradual rise in mercury level [4]
