Time 2:40 Hrs | SECTION – B | Marks: 21

Q.2 Attempt any 8 questions of the following:

i. Why area is a derived quantity?

ii. State general rules for writing significant figures.

iii. If your car accelerate from rest to 140Km/h in just 17.6 seconds on straight road towards east. What is the acceleration of your car?

iv. Can an object have zero acceleration and non-zero velocity at the same time? Give example.

v. Why does a hose pipe tend to move, backward when the fireman directs a powerful stream of water towards fire?

vi. What is the difference between centre of gravity and centre of mass?

vii. What would happen to your weight on earth. If the mass of the earth doubled, but its radius stayed the same?

viii. A meteor enters into earth's atmosphere and bums. What happens to its Kinetic Energy?

ix. Why a small needle sinks in water and huge ships travel easily in water without sinking?

x. Distinguish Temperature, Heat and Internal Energy from each other.

xi. Why a tile floor feels colder to bare feet than a carpeted floor?

SECTION – C Marks: 24

Note: ***Attempt any 3 questions: Each carry 8 marks.***

Q.3: a. Define and explain Speed, Velocity and Acceleration and also write down their units.

b. With what speed must a ball be thrown vertically from ground level to rise to a maximum height of 100m?

Q.4: a. Define equilibrium. Explain its types and state the two conditions of equilibrium.

b. To open a door force of 20N is applied at 30° to the horizontal, find the horizontal and vertical components of force.

Q.5: a. Using Kinetic molecular model of matter, explain three states of matter.

b. An 80cm long, 1.0mm diameter steel guitar string must be tightened to a tension of 2000N by turning the tuning screws. By how much is the string stretched?

Q.6: a. Explain conduction of heat and its mechanism. Describe any two of its practical applications.

b. The volume of a brass ball is $800cm^3$ at 20C . Find out the new volume of the ball if the temperature is raised to $52C^0$. The coefficient of volumetric expansion of brass is $57x10^{-6}\ K^{-1}$.