

SECTION-B

Marks: 32

Q1. Attempt any eight of the following. All carry equal marks.

- i: Why is area called a derived quantity?
- ii: Differentiate between positive acceleration and negative acceleration.
- iii: Define Scalar and vector quantities. Give examples.
- iv: What is centrifugal force? Explain.
- v: Why does a helicopter has a second rotor at its tail?
- vi: What is the difference between force of gravity and force of gravitation?
- vii: Write the names of different forms of energy.
- viii: State the law of conservation of energy.
- ix: State two applications of atmospheric pressure used at home?
- x: Why liquids have two coefficients of expansion?
- xi: How is heat losses reduced in thermos flask?

SECTION-C

Marks: 21

NOTE: Attempt any three of the following questions. All questions carry equal marks.

- 2) i: Distinguish between base and derived physical quantities.
ii: Derive the equation of motion $2aS = v_f^2 - v_i^2$.
- 3) i: Define momentum. Explain the law of conservation of momentum.
ii: A force of 100N is applied perpendicularly at a distance of 0.50m to turn a nut of the wheel of a bus. Find the torque acting on the nut.
- 4) i: State and explain the Newton's law of universal gravitation.
ii: A man whose mass is 75kg, walks up a flight of 12 steps each 20 cm high in 5 sec. Find the power he develops in watts.
- 5) i: State and explain Archimedes principle.
ii: Explain condition of heat. Describe its three applications.