

Higher Secondary (Vocational)
CLASS XI
Semester - 2
Fundamentals of Mechanics

Time Allowed: 1 hour 15 minutes

Full Marks: 30

A. Answer any 5 (five) questions

(5 * 2 = 10)

1. Define the angle of friction.
2. What is Mechanical Advantage?
3. What is Velocity Ratio?
4. What is the different system of pulleys?
5. Define the term 'centre of gravity' and 'centroid'.
6. What do you understand by symmetrical and asymmetrical objects?
7. Define Radius of Gyration.
8. Define moment of inertia and also write the unit.

B. Answer any 5 (five) questions

(5 * 4 = 20)

1. Define the term 'Friction'. State the different laws of static friction. 2+3
2. Explain the concept of limiting friction with the help of a neat diagram. 5
3. State the condition for the reversibility and self-locking of a machine. 5
4. Explain the working of simple screw jack and write down the formula for Mechanical Advantage and Velocity Ratio for this machine. 5
5. Give the position of centroid of the following standard sections: 5
 - (a) Rectangle
 - (b) Triangle
 - (c) Semicircle
6. State and explain parallel and perpendicular axis theorem. 5
7. Determine the moment of inertia of an 'I' section about x axis. 5