Higher Secondary (Vocational)
CLASS XI
Semester - 2
Basic Mechanical Theory & Automobile Basics

Time Allowed: 1 hour 15 minutes   **Full Marks: 30**

A. Answer any 5 (five) questions   (5 * 2 = 10)

1. What is the difference between a measuring instrument and a gauge? Give two examples of each.
2. What is Hooke's Law? How is Young's Modulus related to it?
3. What is the function of a differential in an automobile?
4. Draw a basic block diagram illustrating the power flow path from the engine to the wheels in a conventional automobile.
5. What are the primary functions of the clutch and gearbox in an automobile?
6. List five different electrical and electronic systems commonly found in modern automobiles.
7. What is the purpose of the starting system in a vehicle?
8. List five common tools used in an automotive workshop for vehicle servicing and maintenance.

B. Answer any 5 (five) questions   (5 * 4 = 20)

1. Describe how to measure with a micrometer and a Vernier caliper. Include the least count of the micrometer and the Vernier constant of the Vernier caliper.   4
2. Explain the different types of loads and supports for a beam. Define shear force and bending moment in the context of a beam.   2+2
3. Explain the concept of manual and automatic transmissions in automobiles. Discuss their basic differences and advantages.   2+2
4. Explain the difference between Disc and Drum brake.   4
5. Describe the working of the charging system in a vehicle. How is the battery charged during vehicle operation?
6. Named the different types of ignition systems used in automobiles, explain the working principal any one type of ignition system.   1+3
7. Explain the preventive and breakdown maintenance. Discuss their advantages and disadvantages.   2+2