



**Module-4**

- 7 a. What is composite material? State advantages and applications of composite materials. (06 Marks)  
b. Write short notes on: (i) Shape memory materials (ii) Optical fibre glass (04 Marks)  
c. Derive an expression for the length of belt in crossed belt drive. (10 Marks)

**OR**

- 8 a. Classify metal joining processes. Explain different types of flames used in oxy-acetylene welding. (10 Marks)  
b. A simple gear train consists of four gears having 30, 40, 50, 60 teeth respectively. Determine the speed and direction of the last gear if the first gear makes 600 rpm in clockwise direction. (10 Marks)

**Module-5**

- 9 a. How do you specify a lathe? (04 Marks)  
b. Explain with a neat sketch taper turning by compound slide swiveling method. (10 Marks)  
c. Explain the following operations on milling machine with suitable sketches: (06 Marks)  
(i) Plain milling (ii) Straddle milling (iii) Gang milling

**OR**

- 10 a. Define robot. List the industrial applications of robot. (05 Marks)  
b. Explain the components of CNC with a block diagram. (10 Marks)  
c. Differentiate between open loop and closed loop systems. (05 Marks)

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