

**3rd SEM./MECH/AUTO/AERO/DIP IN MECH/MECH(PROD)
/MECH(MAINT)/MECH(IND INTG)/MECH(SWITCH) - 2021(W)**

Th3- Engineering Materials

Full Marks: 80

Time- 3 Hrs

Answer any **FIVE** Questions including **Q No. 1 & 2**
Figures in the right-hand margin indicates marks

1. Answer **ALL** questions 2 x 10
 - a. Define Porosity.
 - b. What is Mild Steel?
 - c. Define unit cell.
 - d. What is the significance of phase diagram?
 - e. State two properties of spring materials.
 - f. Why heat treatment is needed?
 - g. State two characteristics of Duralumin.
 - h. Define polymerization.
 - i. Explain composite materials.
 - j. What is the function of bearing?

2. Answer **Any SIX** Questions 5x6
 - a. What is Spring? Discuss about different spring materials.
 - b. Explain Frankel Defect with figure.
 - c. Discuss about any two microconstituents of Iron & Steel.
 - d. Classify Composite materials. Discuss about Dispersion-strengthened Composites.
 - e. State the effects of adding Nickel and Molybdenum in steel as alloying elements.
 - f. Discuss about different bearing materials.
 - g. Compare thermoplastic with thermosetting plastics.

3. Discuss about any four types of mechanical properties of engineering materials. 10

4. Discuss about various properties of plastic. 10

5. What is Tool Steel? Classify it and state its properties with composition. 10

6. Draw Fe-C phase diagram. Explain about different phase transformations. 10

7. Explain about different crystal structures. 10