

CHAPTER 2

ENGINEERING MATERIALS

Questions

1. Illustrate with the aid of diagrammatic sketch the classifications of engineering materials.
2. Show with the aid of neat sketch the stages used in producing ferrous metals.
3. What are the furnaces used in producing grey cast iron.
4. Show the effect of cooling rate on the type of cast iron.
5. State the percent of carbon content in cast iron.
6. What is the form of carbon in grey cast iron?
7. List three applications for grey cast iron.
8. Show the advantages of wrought iron.
9. State the range of carbon content in mild steel, medium-carbon steel, and high-carbon steel.
10. State the disadvantages of mild steel.
11. List three applications for mild and medium-carbon steels.
12. Show the effect of the following alloying elements on the properties of steel; chromium, molybdenum, vanadium, tungsten, and lead.
13. Why high-carbon steel is ideal for the manufacturing of hand tools.
14. List the hand tools that manufactured from high-carbon steel.
15. List the percent of constituent materials used in manufacturing molybdenum HSS and tungsten HSS.
16. State three applications of HSS.
17. Show the advantages and disadvantages of non-ferrous metals.
18. Explain the contribution of bronze in previous civilizations.
19. Show the contents of brass and duralumin.
20. Explain the contribution of duralumin in the present civilization.
21. Define the following: tensile strength, yield strength, elasticity, toughness, elastic limit, and hardness.
22. Show the different thermal conductors in soldering iron.
23. Draw and label the stress-strain diagram of steel bar.
24. What is meant by heat treatment of steels?
25. Briefly explain the direct hardening and indirect hardening (case hardening) processes.
26. Briefly explain the Tempering, and Annealing processes.