



**C16-M-401**

**6446**

**BOARD DIPLOMA EXAMINATION, (C-16)**

**OCTOBER/NOVEMBER—2024**

**DME – FOURTH SEMESTER EXAMINATION**

**ENGINEERING MATERIALS**

*Time : 3 Hours ]*

*[ Total Marks : 80*

**PART—A**

*3×10=30*

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Draw stress-strain diagram for ductile material and indicate salient points on it.
2. What is the effect of grain size on mechanical properties?
3. Name various raw materials required for production of iron.
4. Define Phase and solid solution.
5. Define (a) Pearlite and (b) Cementite.
6. What is meant by Quenching in heat treatment?
7. What is the purpose of Annealing?
8. Give the composition and use of grey cast iron.
9. What is alloy steel?
10. Write any three applications of power metallurgy.

**PART—B**

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** Explain Ultrasonic testing with a neat sketch.
- 12.** (a) Define the term Recrystallization.  
(b) Describe the solidification of pure metal with a neat sketch.
- 13.** Explain the manufacturing of cast iron in cupola furnace.
- 14.** Draw a neat sketch of Iron-Carbon equilibrium diagram and indicate salient points on it.
- 15.** List out important heat treatment process of steel. Explain any two of them with neat sketches.
- 16.** Write down the composition, properties and applications of  
(a) 18/8 Stainless Steel and (b) HSS.
- 17.** What are the advantages and limitations of Powder metallurgy?
- 18.** (a) State the differences between toughness and brittleness.  
(b) Write short notes on (i) Brass and (ii) Bronze.

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