



C09-M-404

3504

**BOARD DIPLOMA EXAMINATION, (C-09)
OCT/NOV—2018
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 the stress strain diagrams for cast iron.
2. Define Space Lattice.
3. What are the raw materials required for production of iron?
4. State Gibbs Phase rule and abbreviate the terms involved in it.
5. Define the following terms i) Phase ii) Solid Solution.
- * 6. List out any six methods of Heat treatment of steels.
7. Define the term annealing, how it is done?
8. Write the composition of High Speed Steel.
9. What are the desired properties of bearing metals?
10. What is meant by powder metallurgy?

PART-B

10×5=50

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

- 11.** a) Define the following properties :
i) Hardness ii) Melleability iii) Ductility iv) Brittleness
b) What is a tool steel, List out properties and uses of tool steel.
- 12.** Explain impact test with neat sketch.
- 13.** Draw and explain the BBC and FCC structures. State any three examples in each.
- 14.** Explain how cast iron is manufactured in Cupola Furnace with a neat sketch.
- 15.** a) Define solid solution and explain substitutional and interstitial solid solutions with examples.
b) Define the following terms i) Ferrite, ii) Austenite.
- 16.** a) Define heat treatment? What are the stages of heat treatment process and explain it.
b) Explain carburising process with a sketch.
- 17.** a) How the plain carbon steel are classified and write properties of low carbon steel.
b) Define cast iron? Write properties, applications of grey cast iron.
- 18.** a) State advantages and disadvantages of powder metallurgy.
b) Explain the following methods of compacting metal powders
i) Pressing ii) Centrifugal casting.

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