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C14-M-302

4250

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2021

DME - THIRD SEMESTER EXAMINATION

ENGINEERING MATERIALS

Time : 3 hours]

[Total Marks : 80

PART—A

4×5=20

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

1. Distinguish between destructive and non-destructive test.
2. With a neat diagram explain unit cell.
3. List out methods of steelmaking.
4. Define (a) Ferrite and (b) Pearlite.
5. State Gibbs phase rule and abbreviate the terms involved in it.
6. Write short notes on Annealing.
7. Explain Carburizing and Sub-Zero treatments.
8. List out the types of Cast Iron.
9. Write the composition for (a) Copper and (b) Tin.
10. Define Powder Metallurgy.

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PART—B

15×4=60

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

11. Explain the Ultrasonic testing machine with a sketch.
12. Explain the effects of grain size on properties of metals.
13. Explain how steel is manufactured from Bessemer converter with a neat sketch.
14. Sketch the Iron-Carbon equilibrium diagram and show the salient points phases and critical points.
15. Explain the Heat treatment process of Normalizing with temperature curve and show the salient points phases.
16. (a) Define Hardness and Toughness.
(b) What are the desired properties of bearing metals?
17. Write down the composition, properties and applications of High-Speed Steel and Stainless steel.
18. Explain the following processes :
 - (a) Sintering
 - (b) Compacting

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