



C16-M-401

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**BOARD DIPLOMA EXAMINATION, (C-16)
SEPTEMBER/OCTOBER - 2020
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. State the principle of radiography test.
2. Distinguish between anisotropy and isotropy.
- * 3. What are the main raw materials used for production of iron?
4. Define (a) ferrite and (b) cementite.
5. Distinguish between interstitial and substitutional solid solutions.
6. Define heat treatment. What are the stages involved in heat treatment?
7. Write about vacuum hardening process.

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8. Mention three ^{*} types of aluminum alloys with examples.
9. What are the influences of silicon and phosphorus on plain carbon steels?
10. List any six methods of forming to shape in powder metallurgy.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Write short notes on the following :

(a) Magnetic test

(b) X-ray test

12. Explain the phenomenon of crystallization of pure metal with neat sketches.

13. Draw a line sketch of puddling furnace and explain its working.

14. Sketch the iron-carbon equilibrium diagram and mark the salient points.

^{*} 15. Explain the following processes :

(a) Recrystallization annealing

(b) Spheroidise annealing

16. Write the composition and uses of the following :

(a) Muntz metal

(b) Gunmetal

(c) Aluminium bronze

- 17.** (a) State the ^{*}properties and uses of zinc and tin.
(b) Define (i) toughness, (ii) creep and (iii) brittleness.
- 18.** Write short notes on the following :
- (a) Gravity sintering
(b) Spark sintering
(c) Hot pressing

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