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4250
BOARD DIPLOMA EXAMINATION, (C-14)
JUNE-2019
DME – THIRD SEMESTER EXAMINATION
MATERIALS SCIENCE

Time: 3 Hours

Max. Marks : 80

PART -A

10X3=30M

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

- 1) State the principle of radiography rest.
- 2) Define Space lattice and a Unit cell?
- 3) State the advantages of steel making in electric process.
- 4) Define (a) Ferrite and (b) Austenite.
- 5) What is Thermal equilibrium diagram?
- 6) List out any six methods of Heat treatment of Steel.
- 7) Differentiate between Annealing and Normalizing.
- 8) List out the different types of Cast iron.
- 9) List out any three properties and uses of tool steel.
- 10) Write a short note on sintering.

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PART -B

5X10=50M

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 answer.

- 11) Explain Ultrasonic testing with a neat sketch. 5+5
- 12) (a) What are the factors promoting the grain size. 6+4
(b) What is the effect of grain size on mechanical properties?
- 13) Describe the L-D Converter with a neat sketch. 5+5
- 14) (a) Explain cooling curve of pure iron. 5+5
(b) Distinguish between Hypo eutectoid and Hyper eutectoid steels.
- 15) Explain the following processes.
(a) Carburising and (b) Nitriding 5+5
- 16) Write the Composition, properties and applications of
(i) Gray Cast iron and (ii) White Cast iron 5+5
- 17) (a) Explain the terms creep and fatigue. 4+6
(b) State the properties and uses of Copper and Zinc.
- 18) Explain the following process.
(i) Rolling (ii) Explosive compacting 5+5

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