



DJJ-003-011401

Seat No. _____

M. Sc. (Sem. IV) (CBCS) Examination

May / June – 2015

Industrial Chemistry

IC - 401 : Material Science

Faculty Code : 003

Subject Code : 011401

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions:** 1) All Questions are compulsory & carries 14 marks.
2) Assume suitable data wherever necessary.

Q1] Answer any SEVEN out of the following:

- 1) What is Solid Solution? Give its classification.
- 2) Define NDT and enlist various NDT methods used in Metallurgy.
- 3) Enlist various quenching mediums.
- 4) Draw neat and clean Peritectic Phase Diagram.
- 5) Write limitations of Liquid Penetrant Method.
- 4) Write Principle of Heat Treatment.
- 5) Give classification of engineering materials.
- 6) Define (a) Ductility (b) Toughness
- 7) Define Steel and give Carbon Content present.
- 8) Write a note on Visual Inspection Method.
- 9) Enlist various bonding in Solid materials.
- 10) How the Martensite and Bainite phases can be obtained in Stainless Steel?

Q2] Answer any TWO from the following:

- 1) Discuss classification of Iron-Carbon alloy in detail.
- 2) Explain Property Spectrum of Material in detail.
- 3) Discuss Laminated composites in detail.

Q3] Answer the following:

- 1) Explain Magnetic Particle Inspection Method in detail.
- 2) Give an account of eutectoid phase diagram with example.

OR

Q3] Answer the following:

- 1) Discuss Eddy Current Inspection Method in detail.
- 2) Give an account of Ultrasonic Inspection Method in detail.

Q4] Answer any two from the following:

- 1) Explain Scanning Electron Microscope (SEM) giving Principle of operation in detail.
- 2) Write a note on Radiographic Inspection Method
- 3) Discuss various mechanical properties of metal with example.

Q5] Answer any two from the following:

- 1) Discuss Iron-Carbon Phase Diagram.
 - 2) Enlist and explain functions and the uses of Various Steel Alloying elements.
 - 3) Discuss Fiber reinforced Composites in detail.
 - 4) Explain Eutectic Phase diagram in detail.
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