



NBX-003-011401 Seat No. _____

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

April / May - 2017

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.
- (2) Each question carries 14 marks.
- (3) Assume suitable data wherever necessary.

1 Answer any seven out of the following :

- (1) Write minimum two limitations of liquid penetrant method.
- (2) How can we obtain martensite and bainite phases in stainless steel?
- (3) Define solid solution and enlist its types.
- (4) Which Information can be obtained through phase diagram?
- (5) Draw only diagram of cooling curve used in hardening process.
- (6) Enlist basic equipments used for ultrasonic inspection method.
- (7) Enlist various alloying elements used for the manufacturing of steel.
- (8) Define : (a) Space lattice (b) Unit cell.
- (9) Enlist various bonding in Solid materials.
- (10) Enlist various quenching mediums used in hardening process.

- 2** Answer any two from the following :
- (1) Write a detailed note on various mechanical properties of materials.
 - (2) Explain radiographic inspection method in detail.
 - (3) Draw and explain Peritectic phase diagram in detail.

3 Answer the following :

- (1) Enlist and explain functions and uses of various steel alloying elements.
- (2) Explain classification of Iron-Carbon alloy in detail.

OR

3 Answer the following :

- (1) Discuss dispersion reinforced composites in detail.
- (2) Explain eddy current inspection method in detail.

4 Answer any two from the following :

- (1) Describe the classification of engineering materials.
- (2) Explain magnetic particle inspection method with diagram.
- (3) Discuss various parameters affecting stainless steel.

5 Answer any two from the following:

- (1) Draw and explain Monotectic phase diagram in detail.
- (2) Discuss classification of engineering materials in detail.
- (3) Describe the process of quenching with example.
- (4) Explain Scanning Electron Microscope (SEM) with its principles of operation in detail.
