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SE. (Chemical) (First Semester) EXAMINATION, 2010

CHEMICAL ENGINEERING MATERIALS

(2008 COURSE)

Time : Three Hours

Maximum Marks : 100

N.B. :— (i) Answer **3** questions from Section I and **3** questions from Section II

(ii) Answers to the two Sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

SECTION I

1. (a) Write the classification of Engineering Materials. [3]
- (b) Define the following terms : [8]
- (i) Malleability
- (ii) Ductility
- (iii) Hardness
- (iv) Toughness.
- (c) Explain Necking in brief. [5]

P.T.O.

Or

2. (a) Define Poisson's ratio and its applications. [3]
(b) Draw stress-strain curve showing elastic and plastic limit of metal. [4]
(c) Define factor of safety and give its applications. [6]
(d) Define the term Resilience. [3]
3. What are the different types of Hardness testing methods ? Explain any *two* methods in detail. [16]

Or

4. (a) Write a short note on Brinell Hardness Test. [6]
(b) Explain Impact test in detail. [10]
5. (a) Draw Iron-Iron carbide equilibrium diagram. [6]
(b) Explain various phases observed in Iron-Iron carbide equilibrium diagram. [6]
(c) Explain different reaction involved in Iron-Iron carbide equilibrium diagram. [6]

Or

6. (a) Explain the following terms : [12]
(i) Insulations
(ii) Refractories
(iii) Types of steel.
- (b) Explain the Rolling and Rivetting process in detail. [6]

SECTION II

7. (a) Give and explain any *four* types of corrosion. [12]

(b) Write a short note on Dry corrosion. [4]

Or

8. (a) Explain the different methods of prevention of corrosion. [10]

(b) What is an oxide film ? Explain its formation and growth mechanism. [6]

9. Explain the following : [16]

(i) Vulcanization of rubber

(ii) Nylon-6

(iii) Applications of polymers

(iv) Stress relaxation.

Or

10. (a) Define polymerization. Explain addition and condensation polymerization. [10]

(b) Define natural and synthetic polymers. [6]

11. (a) Write a short note on Vitrification process. [6]

(b) Define ceramic materials. Write applications of ceramic materials. [6]

(c) What are the different mechanical properties of ceramic.? [6]

Or

12. Write short notes on (any *three*) : [18]

- (i) Glass and its types
- (ii) Refractories
- (iii) Applications of ceramic material
- (iv) Cement
- (v) Clays
- (vi) Borosilicates.

