



SF-6425

B. E. - II (Sem - IV) (Chemical) Examination

May / June - 2011

Chemical Engineering Materials

Time : Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="checkbox"/> B. E. - II (Sem - IV) (Chemical)	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="checkbox"/> Chemical Engineering Materials	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="4"/> <input type="text" value="2"/> <input type="text" value="5"/>	<input type="text"/>
Section No. (1, 2,.....): <input type="text" value="NIL"/>	<input type="text"/>
	Student's Signature

(2) Answer all questions.

(3) Figures to the right indicate full marks.

(4) Draw neat and labeled diagrams wherever required.

- 1 (a) Is it possible to have a quadruple point in a phase diagram for one component system ? Justify your answer with an example. 2
- (b) Explain grain boundary. 8
- (c) Calculate degree of freedom in following systems. 8
- (i) Mixture of O<sub>2</sub> and N<sub>2</sub>.
- (ii)  $N_2O_4(g) \leftarrow \text{---} \rightarrow 2NO_2(g)$ .

2 Answer the following : (any two) 8×2=16

- (a) Explain Bi and Cd diagram
- (b) Engineering requirements of materials
- (c) Explain elasticity hardness and resilience.

- 3** Answer the following : (any two) **8×2=16**
- (a) What is lever rule. Explain in detail.
  - (b) Schottky and Frenkel defect.
  - (c) Explain diamond structure with neat diagram. Differentiate its properties from other forms of carbon.
- 4** Attempt the following :
- (a) Do as directed : **5**
    - (i) Define : Corrosion.
    - (ii) Which steel has highest carbon content in it ?
    - (iii) Give composition of Duralumin.
    - (iv) Define : Refractories.
    - (v) Define : Polymerization.
  - (b) Explain the terms : **6**
    - (i) F.R.P.
    - (ii) Polarization.
    - (iii) Hydrogen embrittlement.
  - (c) Discuss in brief alloys for high temperature service. **5**
- 5** Answer the following : (any **three**) **18**
- (a) Give classification and describe steel as a chemical engineering material.
  - (b) Discuss : Nickel and its alloys.
  - (c) Describe mechanism of electrochemical corrosion ?
  - (d) Explain glass : Types and its properties.
- 6** Attempt the following : (any **two**) **16**
- (a) Write brief note on the following :
    - (i) Babbit metal
    - (ii) Hastelloy
    - (iii) Bronze
    - (iv) Phosphor bronze.
  - (b) Explain precipitation hardening in detail.
  - (c) Give classification of polymer, importance of polymer in chemical process industries. Explain in brief.
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