* K D - 6 4 2 5 *

KD-6425

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

December - 2012

Chemical Engineering Materials

Time : **3** Hours] [Total Marks :

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - II (Chem.) (Sem. IV)**

Name of the Subject :

☛ **Chemical Engineering Materials**

☛ Subject Code No. : **6 4 2 5** ☛ Section No. (1, 2,.....) : **1,2**

Seat No. :

Student's Signature

(2) Answer each section separately.

(3) Figures to the right indicate full marks.

(4) Draw neat and labelled diagrams wherever required.

SECTION - I

1 (a) Answer the following. **10**

(1) What is material science ?

(2) List two line defects.

(3) List two properties of covalent solids.

(4) Define slip and twining.

(5) Name the different methods of determining structures.

(b) What is polymorphism ? Explain in detail with an example. **10**

2 Answer the following. (any three) **15**

(1) Name the mechanism of diffusion and explain in detail any one of them.

(2) Explain burgers vectors with neat sketch.

(3) Explain cadmium - bismuth equilibrium diagram.

(4) Discuss properties of Ionic solids.

3 Answer the following.

(1) List type of creep. **2**

(2) Explain typical creep curve for a long time and high temp creep test. **8**

(3) Explain equilibrium diagram of a binary system showing complete intersolubility in liquid and solid states. **5**

OR

(3) Explain axis of symmetry. **5**

SECTION - II

4 Answer the following. **16**

(a) Explain : **6**

(i) Corrosion inhibitors.

(ii) Pitting and crevice corrosion.

(b) Importance of chromium (Cr) and nickel (Ni) in alloy steel. **4**

(c) Explain : Classification and properties of refractories. **6**

5 Attempt any three. **18**

(a) Classify materials, give chemical and physical properties of engineering materials.

(b) Explain mechanism of corrosion.

(c) Nickel and its alloys.

(d) Plastic - Discuss it as important chemical engineering material.

6 Answer the following. (any three) **18**

(a) Write brief notes on any three.

(i) Babbit metal

(ii) Bronze

(iii) Phosphor bronze

(iv) Hastelloy.

(b) Cathodic protection - short note.

(c) Give classification and describe steel as a chemical engineering material.

(d) Classification of polymers; importance of polymers in chemical process indsutry. Explain in brief.
