SE - chem - IV - CBSGS - MSE - 9/12/14 - 230 - 530

QP Code : 12524

(3 Hours) [**Total Marks : 80**

N.B. : (1) Question No.**1** is **compulsory.**
(2) Answer any **four** questions out of remaining **five.**
(3) Draw **diagrams** wherever **necessary.**
(4) **Figures** tp **right** indicate marks.

1. (a) Explain scope of material science & Engineering in chemical engineering? 10
   (b) Explain in detail plastics used for food packaging with examples. 10

2. (a) Explain phenomenon of superconductivity. Explain it's types and applications in detail. 10
   (b) What is ferroelectricity and piezoelectricity? Explain in brief with help of examples. 10

3. (a) Explain mechanism of plastic deformation by slip with help of neat diagram. 10
   (b) Differentiate between ductile & brittle fracture of materials. 10

4. (a) Define creep. Explain mechanism of creep with respect to 10
   (i) Strain versus time diagram
   (ii) Dislocation climb
   (iii) Vacancy diffusion
   (iv) Grain boundary sliding
   (b) Explain any four polymer blends with respect to composition, properties and applications. 10

5. (a) What are clays ? Give classification of clay body ceramics. 5
   (b) What are refractories? What are different types of refractories? 5
   (c) Explain in detail fiber reinforced composites with respect to fibers used, matrix materials and manufacturing methods. 10

6. (a) Explain mechanism of corrosion in metals. Mention different types of corrosion in metals. 10
   (b) Explain different materials used for construction of process equipments in chemical plants. 10

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