JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATION, JUNE -2016

B.Tech (Civil) II Semester

COURSE CODE: 10B11CL212

MAX. MARKS: 35

COURSE NAME: Chemistry

COURSE CREDITS: 4

MAX. TIME: 2 HRS

Note: All questions are compulsory.

Q1.   Give reasons: 8 (2 each)
    (a).   Proper designing reduces corrosion.
    (b).   Electroless plating is better than electroplating.
    (c).   Scattering of light by colloidal particles.
    (d).   Radon gas decreases indoor air quality.

Q2(a).   Recent advances have been made in ceramics which include bioceramics. Justify the statement by giving example.   2

(b).   Describe Chemical speciation and its various methods.   2

Q3(a).   Give review of heat treatment processes of steel.   3

(b).   The density and associated percentage crystallinity for two nylon 6,6 materials are as follows:

ρ (g/cm^3)	crystallinity (%)
1.188	67.3
1.152	43.7

(i) Compute the densities of total crystalline and total amorphous nylon 6,6.
(ii) Determine the density of a specimen having 55.4% crystallinity.   3

Q4(a).   What is the purpose of making alloys? Give composition of German Silver.   2

(b).   Mention different ways to reduce thermal spalling of refractories.   2

Q5(a).   Discuss various raw materials used for the manufacturing of glass.   2

(b).   Crosslinked copolymers consisting of 60 wt% ethylene (C_2H_4) and 40 wt% propylene (C_3H_6) may have elastic properties similar to those for natural rubber. For a copolymer of this composition, determine the fraction of both repeat unit types.   2

Q6(a).   How zeolites are being used in nuclear industry and for water purification?   2

(b)   Molarity of H_2SO_4 is 0.8 and its density is 1.06 g/cm^3. What will be its concentration in terms of molality and mole fraction?   2

Q7(a).   Catalytic converters are used for reducing vehicular exhausts. Explain.   2

(b).   Elaborate the applications of polymers based on particular characteristics.   3