

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST III EXAMINATION- DEC 2022

B.Tech (BT) III<sup>rd</sup> Semester

COURSE CODE (CREDITS): 18B11CE311 (3)

MAX. MARKS : 35

COURSE NAME: Chemistry

COURSE COORDINATOR: Dr. Poonam Sharma

MAX. TIME: Two Hours

*Note: All questions are compulsory.*

- Q1(a). Ceramics are classified in different category according to their uses. Justify this statement. 3
- (b). How chemical speciation is useful to our environment? 3
- Q2(a). Excessive use of chemical fertilizers disturbs the chemistry of soil. Explain. 3
- (b). Describe the formation of photochemical smog and its harmful effects. 3
- Q3(a). Discuss the important characteristics of refractories. 3
- (b). Glass is obtained by fusing a mixture of a number of metallic silicates. Elaborate 3
- Q4(a). Why Galvanization of iron articles is preferred to tinning? 3
- (b). Explain the use of different additives used to improve mechanical properties and processability of polymers. 4
- Q5(a). Paint is a mechanical dispersion mixture of many ingredients. Justify. 3
- (b). Calculate the number and weight average molecular weights of a polymer sample containing 20% of polymer A and 80% of polymer B. The molecular weights of A and B are 3000 and 30,000 respectively. 3
- Q6. The density and associated percent crystallinity for two nylon 6,6 materials are as follows:
- | $\rho$ (g/cm <sup>3</sup> ) | crystallinity (%) |
|-----------------------------|-------------------|
| 1.188                       | 67.3              |
| 1.152                       | 43.7              |
- (a) Compute the densities of totally crystalline and totally amorphous nylon 6,6.
- (b) Determine the density of a specimen having 55.4% crystallinity. 4