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[4756]-12

F.E. (First Semester) EXAMINATION, 2015

APPLIED SCIENCE-I

(Chemistry)

(2008 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Answer *three* questions in all.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(v) Assume suitable data, if necessary.

1. (a) What are seven basic crystal systems ? Give the characteristics of each system with examples. [7]
- (b) Determine total number of elements of symmetry for a cubic crystal system giving suitable diagrams. [6]
- (c) What is radius ratio ? Determine radius ratio for CN = 4. [4]

P.T.O.

Or

2. (a) Define liquid crystals. Give different types and their applications. [7]
- (b) (i) Distinguish between Frenkel and Schottky defects. [3]
- (ii) Write a note on fullerenes. [3]
- (c) Explain applications of ZnS as luminescent. [4]
3. (a) Explain the titration curve for strong acid-strong base titration and mention suitable indicators for the same. [7]
- (b) What is Mohr's method for precipitation titration ? Give its procedure and formula for calculation of chloride content of given water sample. [6]
- (c) Calculate morality and normality of a solution of 0.5 g NaOH dissolved in 500 ml water. [4]

Or

4. (a) Explain complexometric titration with suitable example. [7]
- (b) Calculate the pH at different stages in titration of weak acid-strong base. [6]
- (c) Calculate equivalent weight of KMnO_4 in acidic medium.
- [At.wt K = 39, Mn = 55, O = 16] [4]

5. (a) Explain Addition polymerization mechanism on the basis of free radical with example. [6]
- (b) Give polymerization reaction, properties and uses of the following polymers : [6]
- (i) S.B.R.
- (ii) Polystyrene.
- (c) Write a note on any *one* : [4]
- (i) Biodegradable polymers
- (ii) Conducting polymers.

Or

6. (a) State the drawbacks of Natural Rubber. Explain how they are overcome by vulcanization, with the help of chemical reaction involved in it. [6]
- (b) What are plastics ? Give an account on compounding of plastics. [6]
- (c) Compare LDPE and HDPE. [4]