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Code No. 225 / E

FACULTY OF SCIENCE

B.Sc. I-Semester (CBCS) Examination, December 2016

Subject : Chemistry

Paper – I

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Write a short note on Borazole.
2 Write a note on common ion effect.
3 Write a note on Corey-House reaction.
4 Explain the conformations of cyclohexane and justify its stability.
5 Write the applications of liquid crystals.
6 Write schrodinger wave equation and explain various terms in it. What is the significance of ψ^2,
7 Explain the applications of Fajan's rule.
8 Define Accuracy and precision and explain any one method for their determination.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL the questions.

9 (a) (i) Define diagonal relationship. Explain the diagonal relation between Be and Al.
(ii) How is diborane prepared? Discuss its structure.

OR

(b) (i) What are silicones? Write any two preparation methods and their applications.
(ii) Write the preparations and reactions of Hydrazine.

10 (a) (i) Define inductive effect. Explain the acidity of carboxylic acids with inductive effect.
(ii) What is mesomeric effect? Explain acidity of phenol.

OR

(b) Explain Zaitsev's (Saytzeff's) Rule and Markownikov's Rule with one example each.

11 (a) Derive Van der Waal's gas equation. Explain how it explain the real gas behaviour. 3 moles of SO_2 occupies 15 liters at 200°C using Van der Waal's equation calculate its pressure. Van der Waal's constants for SO_2 are $a = 6.71$ atm L^2 mol^{-2}, $b = 0.056$ L mol^{-1}.

OR

(b) (i) Write about Heisenberg's uncertainty principle.
(ii) Write about quantum numbers and their importance.

12 (a) Show which molecular orbitals are occupied by electrons, and work out the bond orders as well as the magnetic properties of N_2 and CO molecules.

OR

(b) Draw the molecular orbital energy level diagrams of O_2 and NO molecules. Explain their bond order and magnetic character.

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