UG–685 **BCHE–12**

B.Sc. DEGREE EXAMINATION – JUNE, 2018.

First Year

Chemistry

Paper 2 — GENERAL CHEMISTRY – II

Time : 3 hours Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any THREE questions out of Five.

1. (a) Explain the merits of molecular orbital theory over valence bond theory. (3)

   (b) Predict the geometry of IF_7 and H_2O. (2)

2. Discuss the following reactions involving alkene.

   (a) Conversion of propene to 1 -propanol, give the reagent

   (b) Hydroboration reaction.

3. (a) Define the term: refractive index. (2)

   (b) Give the characteristics of liquid crystals. (3)

4. (a) Compare natural and chemical fertilizers and give example. (3)

   (b) Give the preparation of DDT. (2)

5. Discuss about the following reactions. (5)

   (a) Wurtz reaction and

   (b) Ozonolysis of alkenes.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions out of Five questions.

6. (a) Discuss the sp^3 and dsp^3 hybridisations with suitable example. (5)

   (b) Write a note on azimuthal and spin quantum numbers. (6)

   (c) Exactly half-filled and completely filled orbitals are stable. Comment on it. (4)

7. Discuss the following reactions and give suitable example. (15)

   (a) Wittiq reaction,

   (b) Hofmaan degradation,

   (c) Benzoin condensation

   (d) Cope elimination reaction,

   (e) Micheal addition reaction.

8. (a) Write a note on nematic, smectic, and cholesteric liquid crystals. (9)

(b) Discuss the effect of temperature on viscosity of gas and liquid. (6)

9. (a) Elaborate on the role of different elements involved in plant growth. (9)

(b) Write a short note on Nitrogenous fertilizers. (6)

10. (a) Discuss in detail about the stability of cycloalkanes using Bayer's strain theory. (7)

(b) Compare the stability of primary, secondary and tertiary carbocations, and carbanions, respectively. (8)

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