UG-350 **BCHE-11**

B.Sc. DEGREE EXAMINATION – JUNE, 2019.

First Year

Chemistry

GENERAL CHEMISTRY — I

Time : 3 hours Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any THREE questions.

1. Give IUPAC name for the following organic compounds.

(a) $CH_3 - CH = CH - CH_2 - CH_2 - CH_3$

(b) $H_2N - CH_2 - CH_2 - CH_2 - CH_3$

(c)
$$CH_3 - CH_2 - CH_2 - \underset{\displaystyle OH}{\underset{|}{CH}} - CH_2 - CH_3$$

(d)
$$CH_3 - CH_2 - \underset{\displaystyle CHO}{\underset{|}{CH}} - CH_3$$

(e)
$$CH_3 - \underset{\displaystyle O}{\underset{\|}{C}} - CH_2 - CH_3$$

2. (a) Write the structure of the following compounds :

(i) 3-aminopropan-l-ol

(ii) 2-methylpyridine

(b) Write short notes on inductive effect.

3. How the elements are classified based on the electronic configuration?

4. Explain hydrogen bonding with suitable examples.

5. Write short notes on viscosity and surface tension.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

6. (a) How the organic compounds are classified based on the C and H atoms?

(b) State and explain the IUPAC rules for naming aliphatic compound containing alcohols and amines.

7. Write short notes on the followings :

(a) resonance effect

(b) hyperconjugation

(c) steric effect.

8. Give an account for the followings :

   (a) Atomic radii

   (b) Ionic radii

   (c) Bond length.

9. (a) Write the properties of ionic compounds.

   (b) Explain octet rule with suitable examples.

10. Write a short note on Liquid crystals and its applications.

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UG–351 **BCHE–12**

B.Sc. DEGREE EXAMINATION — JUNE, 2019.

First Year

Chemistry

GENERAL CHEMISTRY – II

Time : 3 hours Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any THREE questions.

1. (a) Calculate the bond order value for He_2^+ molecular cation using MO theory.

   (b) State Pauli's exclusion principle. (3 + 2)

2. (a) State Zaitsev (Saytseff) Rule and give an example.

   (b) Write the Huisgen 1,3-dipolar cycloaddition reaction. (3 + 2)

3. (a) Define the term vapour pressure.

   (b) What are the characteristics of liquid crystals? (2 + 3)

4. (a) Write any two reactions to obtain hydrocyanic acid.

(b) Give the preparation of Gammexane. (3 + 2)

5. (a) State Markovnikov's rule with an example.

(b) Give the equation for ozonolysis of alkyne. (3 + 2)

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

6. (a) Write a note on principal and magnetic quantum numbers.

(b) Discuss the hybridisation in CH_4 and SF_6 using VBT.

(c) Write a short note on exchange energy. (6 + 6 + 3)

7. (a) Elaborate on E_1 and E_2 elimination reaction with suitable examples.

(b) Discuss about the following reactions.

(i) Michael addition,

(ii) Mannich reaction. (9 + 3 + 3)

8. (a) Write the applications of liquid crystals.

(b) Write a note on the effect of temperature on surface tension and viscosity of liquids.(6 + 9)

9. (a) Discuss the advantages and disadvantages of natural and chemical fertilizers.

(b) Describe the preparation and uses of DDT and Lead arsenate. (8 + 7)

10. (a) Write a note on Diels-Alder reaction.

(b) Discuss in detail about Baeyer's Strain theory and its demerits. (6 + 9)

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UG-352 **BCHEA-01**

B.Sc. DEGREE EXAMINATION – JUNE 2019.

First Year

GENERAL PHYSICS

Time : 3 hours Maximum marks : 75

SECTION A — (3 × 5 = 15 marks)

Answer any THREE questions out of 5 questions

1. State Newton's laws of gravitation.
2. Give the expression for Poisson ratio.
3. State and explain Coloumb's law and Gauss theorem.
4. State Kirchoff's laws.
5. State the principles of LED and LCD.

SECTION B — (4 × 15 = 60 marks)

Answer any FOUR questions.

6. (a) Determine the reverberation time by Sabine's formula.

Or

(b) Determine the center of gravity of a solid hemisphere and solid cone.

7. (a) Describe an experiment to determine the young's modulus of a bar by non-uniform bending using pin and microscope.

Or

(b) State and explain the second law of thermodynamics.

8. (a) Describe the theory, experiment and applications of Raman effect.

Or

(b) Explain the principle of capacitor and describe how you can determine the capacity of an isolated sphere.

9. (a) Explain wheatstone's bridge and also state the conditions for bridge balance.

Or

(b) Describe the carey Foster's bridge.

10. (a) Draw and explain zener diode characteristics.

Or

(b) Give in detail about the basic and universal logic gates.

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