

UG-684

BCHE-11

**B.Sc. DEGREE EXAMINATION —
JUNE, 2018.**

First Year

GENERAL CHEMISTRY — I

Time : 3 hours

Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any **THREE** questions.

1. Write an example each for molecule containing primary carbon, secondary carbon and tertiary carbon.
2. Give the name and structure of :
 - (a) any two heterocyclic compounds with one hetero atom.
 - (b) any two heterocyclic compounds with two hetero atoms.
3.
 - (a) Mention any two s-block elements with electronic configuration.
 - (b) Mention any two p-block elements with electronic configuration.

4. What is octet rule? Explain with examples.
5. (a) Define ideal gas.
(b) Write the Van der Waals equation.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

6. (a) Write any two rules for IUPAC nomenclature.
(b) Give the IUPAC name for following compounds :
- (i) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
- (ii) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$
- (iii) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
- (iv) $\text{CH}_3 - \text{CH}_2 - \text{OH}$.

7. Write a short note on the following :
- (a) inductive effect
(b) electromeric effect
(c) resonance effect
(d) steric effect.

8. Give an account of the following :
- (a) atomic radii
 - (b) ionic radii
 - (c) ionization energy
 - (d) electronegativity.
9. Briefly discuss the following with one example each.
- (a) Born-Haber cycle
 - (b) Fajan's rule.
10. (a) Write the postulates of kinetic theory of gases.
- (b) Derive the kinetic equation for gases.
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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.

- Explain the merits of molecular orbital theory over valence bond theory. (3)
 - Predict the geometry of IF_7 and H_2O . (2)
- Discuss the following reactions involving alkene.
 - Conversion of propene to 1 -propanol, give the reagent
 - Hydroboration reaction.
- Define the term: refractive index. (2)
 - 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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BCHEA-01

**B.Sc. DEGREE EXAMINATION —
JUNE 2018.**

First Year

Chemistry

GENERAL PHYSICS

Time : 3 hours

Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any THREE questions out of Five questions.

1. Define centre of gravity. Deduce the centre of gravity for of a solid hemisphere.
2. Explain the reversible and irreversible process.
3. State Raman effect and explain the theory of Raman effect for light scattering.
4. Show that resistance varies with temperature using a Carey Foster bridge.
5. State and explain the De Morgan's theorem.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions out of Five questions.

6. (a) State and explain the Kepler's laws of planetary motion.
(b) Derive the Sabine formula for the determination of reverberation time.
7. (a) State Hooks law. Define and explain three moduli.
(b) State and explain the second law of thermodynamics.
8. (a) State and explain Coulomb's law.
(b) Define capacitance. Obtain expression for energy of a capacitor.
9. (a) State the Kirchoff's laws. Obtain the balancing condition for Wheatstone bridge.
(b) Define self-induction and mutual induction of coils.
10. (a) Draw and explain the characteristics of junction diode.
(b) Explain the principle of light emitting diode.