

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024
(Third Semester)

Branch – CHEMISTRY

GENERAL CHEMISTRY - III

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 In diborane, the banana bond is formed between

(i) 2 electrons, 3 atoms	(ii) 2 electrons, 1 atoms
(iii) 1 electrons, 2 atoms	(iv) 2 electrons, 2 atoms
- 2 Find the dicarboxylic acid from the following.

(i) Benzoic acid	(ii) Malonic acid
(iii) Salicylic acid	(iv) Cinnamic acid
- 3 What is the reagent which will react with cumene to give phenol?

(i) Nitrogen	(ii) Hydrogen
(iii) Oxygen	(iv) Ozone
- 4 Identify the entropy change in an irreversible process

(i) $\Delta S_{\text{Total}} > 0$	(ii) $\Delta S_{\text{Total}} < 0$
(iii) $\Delta S_{\text{Total}} = -1$	(iv) $\Delta S_{\text{Total}} = 0$
- 5 If both the forward and reverse reaction rates are equal in the equilibrium is said to be _____.

(i) Equilibrium mixture	(ii) Dynamic equilibrium
(iii) Newton equilibrium	(iv) Static equilibrium

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Discuss about the electron acceptor behavior of boron hydrides.
OR
- b Explain the preparation, properties and structure of Perdisulphuric acids.
- 7 a Analyzing the preparation and properties of benzaldehyde.
OR
- b List out the preparation of Acetophenone.
- 8 a Give the details preparation, properties and uses of chloroform.
OR
- b How is 1,2 dichloro ethane prepared? List out its properties and uses.
- 9 a Illustrate the limitation of first law of thermodynamics.
OR
- b Derive Gibbs Helmholtz equation.
- 10 a Derive Gibbs Duhem equation.
OR
- b State the third law of thermodynamics.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss in detail about preparation, properties and structure of borazole.
OR
b Write the preparation and structure of AB_5 and AB_7 of Interhalogen compounds.
(3+3)
- 12 a Describe the preparation and properties of Cinnamic acid.
OR
b Explain the preparation, properties of oxalic acid and Succinic acid.
- 13 a Differentiate between primary, secondary and tertiary alcohols by Lucas and Victor Meyer methods. (3+3)
OR
b List out the preparation and properties of resorcinol.
- 14 a Elucidate the Carnot's theorem.
OR
b Evaluate an expression for the entropy of a mixture of ideal gas.
- 15 a Derive the Clapeyron Clausius equation with its application.
OR
b Applying the Le-Chatelier's principle and physical equilibria.

Z-Z-Z

END