

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(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)

- The compounds are formed by the Boron family are _____.
(i) ionic (ii) covalent
(iii) both ionic and covalent (iv) neither ionic nor covalent.
- Citric acid is a _____ acid.
(i) Monobasic (ii) Dibasic
(iii) Monoprotic (iv) Tribasic.
- Which of the following is used as an anaesthetic in dentistry during root canal procedure?
(i) Chloroform (ii) Carbon tetrachloride
(iii) Methylene chloride (iv) Ethylene chloride.
- What is the relation between Gibbs free energy and EMF of the cell?
(i) $\Delta G = -nFE_{\text{cell}}$ (ii) $G = -nFE_{\text{cell}}$
(iii) $\Delta G = -nE_{\text{cell}}$ (iv) $\Delta G = -nF_{\text{cell}}$
- Which of the following law was formulated by Nernst?
(i) First law of thermodynamics (ii) Second law of thermodynamics
(iii) Third law of thermodynamics (iv) None of the above

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- a. Write the preparation and uses of silicones.
(OR)
b. How is polymetaphosphate prepared? Write the uses of it.
- a. How is salicylaldehyde prepared from phenol?
(OR)
b. List out the preparation and properties of benzoic acid.
- a. Describe the nomenclature of aliphatic halogen compounds.
(OR)
b. Outline a short note on vicinal and geminal dihalides.
- a. Write the statements of second law of thermodynamics.
(OR)
b. Explain the concept of entropy. Write the physical significances of it.
- a. Derive Gibbs-Duhem equation.
(OR)
b. Derive the temperature dependence of equilibrium constant.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a. Explain in detailed note on banana bonding formation in diboranes.
(OR)
b. Discuss the structure and type of AB_3 and AB_5 types of interhalogen compounds.
12. a. Write the resonance structure of benzaldehyde and explain how it undergoes nucleophilic substitution reactions with suitable example.
(OR)
b. Write the preparation, properties and uses of cinnamaldehyde.
13. a. Explain the preparation, properties and uses of ethyl chloride.
(OR)
b. How would you distinguish between primary, secondary and tertiary alcohols?
14. a. Describe the criteria for equilibrium and spontaneity in terms of change in free energy.
(OR)
b. Derive Gibbs-Helmholtz equation.
15. a. What is meant by chemical potential? Discuss the variation of chemical potential with pressure and temperature.
(OR)
b. State and Explain Le-chatelier's principle.

Z-Z-Z

END