PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023
(Third Semester)

Branch – **BOTANY**

CHEMISTRY – I

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (5 x 1 = 5)

1. All four quantum numbers cannot be the same for any two electrons in an atom. This principle is known as
   a) Aufbau principle
   b) Hund's Rule
   c) Pauli's Exclusion principle
   d) None of the above

2. Which of the following is a characteristic of an aromatic compound?
   a) Cyclic
   b) Planar
   c) $(4n+2)\pi$ electrons
   d) All of the above

3. Which of the following concentration determine techniques gives a more accurate value?
   a) Molarity
   b) Molality
   c) Formality
   d) Normality

4. The rate of a chemical reaction tells us about
   a) the reactants taking part in the reaction
   b) the products formed in the reaction
   c) how slow or fast the reaction is taking place
   d) none of the above

5. Measuring BOD (biological oxygen demand) is primarily used for
   a) estimating the types of microbes
   b) determine the level of dissolved oxygen
   c) estimating the quantity of organic matter in sewage water
   d) none of the above

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks   (5 x 3 = 15)

6 a. State the Alfbauf principle and Hund' rule.
                        OR
   b. Explain the oxidizing and reducing agents.

7   a. Explain the preparation and properties of benzene.
<div align="center">OR</div>
     b. Discuss the classification of alkaloids.

8   a. Define the following terms.
         i. Normality   ii. Molarity.
<div align="center">OR</div>
     b. Explain the steam distillation.

9   a. Compare the order and molecularity.
<div align="center">OR</div>
     b. Discuss the types of catalysis.

10   a. Explain the classification of pollutant.
<div align="center">OR</div>
     b. Describe the factors affecting soil pollution.

<div align="center">

SECTION -C (30 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks   (5 x 6 = 30)

</div>

11 a. Explain the types of orbitals with example.
<div align="center">OR</div>
     b. Explain the shapes of BF_3 and IF_6.

12 a. Explain the preparation, properties and uses of nicotine.
<div align="center">OR</div>
     b. Discuss the isolation and uses of geraniol.

13 a. Explain any two methods of purification of solids.
<div align="center">OR</div>
     b. Explain in details how the components of a mixture can be separated by column chromatography.

14 a. Explain the parallel reaction with example.
<div align="center">OR</div>
     b. Explain the mechanism of enzyme catalysis.

15 a. Explain the sources and effects of air pollution like acid rain and Global warming.
<div align="center">OR</div>
     b. Discuss the contamination of foods with toxic chemicals and pesticides.

<div align="center">

Z-Z-Z   END

</div>