22BOU311/18BOU11

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024
(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. According to the Aufbau principle
   i) electrons enter the lowest available energy level
   ii) only two electrons can occupy an orbital
   iii) orbitals are regions where one is likely to find an electron
   iv) electrons tend to remain unpaired

2. The number of delocalised π electrons in the benzene ring are
   i) 6 ii) 8 iii) 2 iv) 4

3. What symbol is used to denote 'molality'?
   i) M ii) m iii) Mm iv) n

4. A catalyst alters, which of the following in a chemical reaction?
   i) entropy ii) enthalpy
   iii) internal energy iv) activation energy

5. The main contributors of acid rain are
   i) sulphur oxides and carbon oxides
   ii) nitrogen oxides and sulphur oxides
   iii) carbon dioxide and carbon monoxide
   iv) nitrogen oxides and carbon oxides

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

6 a State the Hund' rule and Pauli exclusion principle.
OR
b Mention the calculation of oxidation number.

7 a Discuss the classification of terpenoids.
OR
b Describe the structure and applications of starch.

8 a Define the following terms.
i. Mole fraction ii. Molality.
OR
b Explain the fractional distillation.

9 a Explain the differences between order and molecularity.
OR
b Discuss the characteristics of enzyme catalysis.

10 a Explain the types of pollution.
OR
b Describe the effects of pesticides.

Cont...

SECTION -C (30 Marks)

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

11 a Explain the shapes of s, p, d and f orbitals.

OR

b Explain the shapes of SF_6 and IF_7.

12 a Explain the preparation, properties and uses of piperine.

OR

b Discuss the isolation and uses of citral.

13 a Explain the crystallization and sublimation methods.

OR

b Explain the principles and applications of paper chromatography.

14 a Derive an expression for the rate constant of a first order reaction.

OR

b Explain the consecutive reaction with example.

15 a Explain the eutrophication water treatment.

OR

b Discuss the sources of soil pollution and factors affection soil pollution.

Z-Z-Z END