PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION MAY 2023
(Third Semester)

Branch – ZOOLOGY

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   The oxidation number of free calcium is ____.
    (i)   zero   (ii) one
    (iii) three   (iv) four

2   A terpenoid used in the manufacture of celluloid and also as a moth repellent is
    (i)   Menthol   (ii) Citral
    (iii) Camphor   (iv) Geraniol

3   The principle involved in paper chromatography is
    (i)   adsorption   (ii) partition
    (iii) solubility   (iv) volatility

4   The reaction rate constant can be defined as the rate of reaction when each reactant's concentration is
    (i)   unity   (ii) doubled the initial concentration
    (iii) zero   (iv) infinite

5   Increased levels of air pollution result in ____.
    (i)   soil erosion   (ii) global warming
    (iii) respiratory problems   (iv) all of the above

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

6   a   State the Pauli exclusion principle.
                        OR
    b   Classify the following species as oxidizing and reducing agents:
        i) Fe^{2+} ii) Cl^- iii) S^{2-}

7   a   Bring out the Huckel's rule.
                        OR
    b   State the isoprene rule.

8   a   Apply sublimation method of purification of liquids.
                        OR
    b   Explain the mass percentage and volume percentage.

9   a   Describe the pseudo unimolecular reactions with example.
                        OR
    b   Narrate the catalytic poisoning and catalytic promotors.

10 a   Show the various effects of acid rain.
                        OR
    b   Summarize the sources of soil pollution.

Cont...

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

11 a   Explain the Arrhenius, Bronsted-Lowery and Lewis concepts with examples.
OR
   b   Calculate the oxidation number of the atom underlined in the following.
i) $\underline{Cl}O_3^-$ ii) $\underline{Cr}_2O_7^{2-}$ iii) $Na_2\underline{S}_2O_3$ iv) $\underline{C}_6H_{12}O_6$ v) $K_4[\underline{Fe}(CN)_6]$ vi) $O\underline{F}_2$

12 a   Discuss the preparation and properties of nicotine.
OR
   b   Summarize the preparation and uses of Teflon and Terylene.

13 a   Outline the fractional distillation.
OR
   b   Highlight the principles of thin layer chromatography.

14 a   Derive the rate constant for first order reaction.
OR
   b   Discuss the mechanism of enzyme catalysis.

15 a   Elucidate the primary, secondary and tertiary methods of water treatment.
OR
   b   Discuss the contamination of foods with toxic chemicals and pesticides.

Z-Z-Z   END