

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2022
(Second Semester)**

Branch – **CHEMISTRY**

GENERAL CHEMISTRY - II

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (5 x 1 = 5)

- 1 Noble gases do not react with other elements because
 - (i) they have vacant electron shells
 - (ii) they are monoatomic
 - (iii) their size is very small and highly unstable
 - (iv) they have completely paired up and stable electron shells
- 2 A well stoppered thermos flask contains some ice cubes. This is an example of
 - (i) Closed system
 - (ii) Open system
 - (iii) Isolated system
 - (iv) Non thermodynamics system
- 3 The miller indices for Weiss indices 2:4:3 are
 - (i) 312
 - (ii) 321
 - (iii) 634
 - (iv) 123
- 4 Which of the following reactions is common in alkenes?
 - (i) Addition
 - (ii) Elimination
 - (iii) Substitution
 - (iv) Superposition
- 5 Which of the following statements is true for benzene?
 - (i) Benzene easily undergoes addition due to unsaturation
 - (ii) π -electrons are delocalised in the benzene ring
 - (iii) Three isomeric forms are formed on monosubstitution of benzene
 - (iv) Two types of C-C bonds are present in benzene

SECTION - B (15 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

- 6 a Bring out the extraction procedure for Be and Ca from any one of its ores.
OR
- b Compare IA and IIA group elements.
- 7 a Show that the change in enthalpy is zero in isothermal expansion of an ideal gas.
OR
- b Explain Kirchhoff Equation explaining variation of Enthalpy of reaction with temperature.
- 8 a Define the terms 'amorphous', Crystal and Crystal lattice. Sketch on the possible symmetry operations in a crystal?
OR
- b What is a unit cell? Explain bravais lattices.
- 9 a Why are alkanes called saturated hydrocarbons while alkene and alkyne are called as unsaturated? Explain with one example.
OR
- b What is the peroxide effect? Explain with an example?

Cont...

- 10 a Outline the Huckel's rule of aromaticity?
OR
b Among Toluene and Aniline, Which will undergo Friedel-Crafts alkylation with methyl chloride and aluminum chloride? Why?

SECTION -C (30 Marks)

Answer ALL questions

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

- 11 a Bring out the reasons why lithium has diagonal relationship with magnesium?
OR
b Discuss on noble gases. Where are they located in periodic table? Why?
- 12 a Discuss on the following.
(i) What does the Joule-Thomson coefficient represent?
(ii) inversion temperature
OR
b Describe Hess's Law of Constant Heat Summation with an example.
- 13 a Enumerate on X-ray diffraction and Bragg's law.
OR
b Analyze the crystal structure of NaCl, Diamond and Graphite?
- 14 a Brief on Saytzeff and Hofmann rules in elimination reactions.
OR
b What are dienes? Explain 1,2 and 1,4 addition mechanism in conjugated dienes with suitable examples?
- 15 a i) Benzene is highly unsaturated, yet it does not give usual addition reactions readily. Why?
ii) Summarise the structure and bonding in benzene with neat diagram.
OR
b Elucidate the mechanism of nitration of benzene.

Z-Z-Z

END