

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2019
(Third Semester)

Branch- PHYSICS

CHEMISTRY-I

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions
ALL questions carry EQUAL marks (10x1 = 10)

- 1 Identify the geometry of SF₆ molecule
(i) Tetrahedral (ii) Trigonalbipyramidal
(iii) Octahedral (iv) Plane Triangular
- 2 H₂ S₂ Og indicates _____
(i) Pyrosulphuric acid (ii) Permonosulphuric acid
(iii) Perdisulphuric acid (iv) Thiosulphuric acid
- 3 Choose the Hemlock alkaloid among the following.
(i) Connine (ii) Nicotine
(iii) Pelerine (iv) Quinine
- 4 Which of the following is flurocarbon plastic?
(i) Nylon (ii) Teflon
(iii) Terylene (iv) Rayon
- 5 Mention the number of centre of symmetry present in a molecule
(i) 1 (ii) 2
(iii) 3 (iv) 4
- 6 Identify the number of atoms in a face-centered cubic unit cell unit cell
(i) 12 (ii) 8
(iii) 6 (iv) 4
- 7 Match the following phrase with molecularity
(i) is always whole number (ii) cannot be less than 2
(iii) can have a fraction value (iv) can be zero
- 8 Identify the nature of colloidal systems
(i) homogenous (ii) heterogenous
(iii) suspensions (iv) solutions
- 9 Which of the following statement is universally correct for catalyst?
(i) All kinds of catalysts undergo catalytic poisoning
(ii) A catalyst physically changes at the end of reaction
(iii) Catalyst takespart in reaction
(iv) Catalyst remains unchanged at the end of reaction
- 10 Mention the energy absorbed per mole of the reacting substance
(i) Einstein (ii) Photons
(iii) Quantum yield (iv) Quanta

SECTION - B (25 Marks)

Answer ALL questions
ALL questions carry EQUAL Marks (5x5 = 25)

- 11 a State the postulates of Werner's co-ordination theory.

OR

- 12 a Classify the dyes and give one example each.
OR
- 12 b How are the following prepared? Give its any 3 uses,
(i) Polyester (ii) Polyacrylonitrile
- 13 a Calculate the miller indices of a crystal planes which cut through the crystal axis at
(i) (2a, 3b, c) (ii) (a, b, c) (iii) (2a, -3b, -3c).
OR
- b Analyze the structure of Diamond.
- 14 a Describe the rate constant and half life time for a 1st order reaction.
OR
- b How can be colloids prepared and purified?
- 15 a Explain the promoters and catalytic poisoning.
OR
- b Explain the quantum yield and the classification of reactions based on quantum yield.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

- 16 a (i) Elucidate the shape of XeFe_2 based on VSEPR theory.
(ii) Justify EAN rule with two examples.
OR
- b Discuss (i) Analytical applications of co-ordination compounds.
(ii) Preparation, properties and uses of sodium hydrosulphate .
- 17 a Discuss alkaloids, their classification and properties.
OR
- b Outline (i) Isoprene rule (ii) Biodegradable polymers
- 18 a (i) Distinguish isotropy and anisotropy .
(ii) Discuss the elements of symmetry.
OR
- b Discuss the structure of NaCl and CsCl.
- 19 a Differentiate order and molecularity. Discuss any one method of determination of order of a reaction.
OR
- b (i) Outline the types, properties and stability of colloids .
(ii) Discuss the gold number in brief.
- 20 a Discuss the enzyme catalysis with its mechanism.
OR
- b Summarize the laws of photochemistry.