

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

**BSc DEGREE EXAMINATION MAY 2018
(Second Semester)**

Branch – **CHEMISTRY**

GENERAL CHEMISTRY - II

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 x 2 = 20)

- 1 When the sodium metal is dissolved in liquid ammonia, it gives blue colour. Give the reason.
- 2 Why does beryllium show exceptional properties?
- 3 Distinguish between state and path functions.
- 4 State first law of thermodynamics. Give its mathematical form.
- 5 Calculate the miller indices of crystal plane which cut through the crystal axes at (2a, 3b, c).
- 6 Draw the crystal structure of CsCl.
- 7 Electrophilic addition to a carbon-carbon double bond involves the intermediate formation of the more stable carbocation. Which rule is replaced by this general rule?
- 8 Why are hydrogen atoms in acetylene more acidic than those in ethylene?
- 9 Give any two examples for heteronuclear aromatic compounds.
- 10 Distinguish between activating and deactivating substituents.

SECTION - B (25 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

- 11 a Explain the diagonal relationship between Li and Mg.
OR
b Compare the properties of I-A and II-A elements.
- 12 a Derive an expression for work done in an isothermal reversible expansion of a gas.
OR
b What is Joule-Thomson effect? Give the experimental setup of Joule – Thomson effect.
- 13 a Illustrate the crystal structure of NaCl.
OR
b Compare the properties of amorphous and crystalline solids.
- 14 a Explain the mechanism of electrophilic addition in alkene with suitable example.
OR
b Discuss the 1, 2- and 1, 4- addition reactions in butadiene.

Cont ...

- 15 a Explain the energy profile diagram for nitration of benzene.
OR
b State Huckel's rule. How can it be used to justify the aromatic nature of benzene and naphthalene ?

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

- 16 Discuss the position of noble gases in periodic table. Give any one method of separation of noble gases.
- 17 Derive thermodynamically the relationship between heat capacity at constant volume and pressure.
- 18 a) Derive Bragg's equation. (5)
b) List out any five applications of X-ray diffraction. (5)
- 19 Explain the following with example : (a) Peroxide effect in alkene
(b) Diels - Alder reaction (c) Metal - ammonia reduction of alkyne. (3 + 3 + 4)
- 20 a) Illustrate the molecular orbital picture of benzene. (5)
b) Explain the mechanism of Friedel - Craft alkylation reaction. (5)

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END