PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Fourth Semester)

Branch – **CHEMISTRY**

GENERAL CHEMISTRY - IV

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 1 = 10)

1 Solvent extraction is governed by which law?
(i) Boyle's law (ii) Ostwald dilution law
(iii) Nernst distribution law (iv) Beer's law

2 In chromatography, the mobile phase consist of the following components
(i) Solid or liquid (ii) Liquid or gas
(iii) Gas only (iv) Liquid only

3 Ore dressing from iron is done by
(i) Froth floatation process (ii) Magnetic separation
(iii) Hand picking (iv) All the above

4 Roasting is generally done in case of the following ores!
(i) Oxide ores (ii) Silicate ores
(iii) Sulphide ores (iv) Carbonate ores

5 The most convenient method to prepare primary amine containing one carbon atom less is
(i) Gabriel phthalmidie synthesis (ii) Reductive amination of aldehydes
(iii) Hofmann bromamide reaction (iv) Reduction of isonitriles

6 Secondary amines can be prepared by
(i) reduction of nitro compounds (ii) oxidation of N-substituted amides
(iii) reduction of isonitriles (iv) reduction of nitriles

7 Which of the following compound would show optical isomerism?
(i) $CH_3 - CH(OH)\ COOH$ (ii) $H_2N\ CH(CH_3)_2$
(iii) $(CH_3)_2\ CHCHO$ (iv) $H_2N\ CH_2\ COOH$

8 The number of racemic forms of molecules having (n) different chiral carbons is_____
(i) 2n (ii) 2^n
(iii) 2^{n-1} (iv) 2^{n+1}

9 Identify the use of petroleum coke ?
(i) as Lubrication (ii) In candles
(iii) As fuel (iv) As solvent

10 Producer gas consists mainly of_____.
(i) $CO, CO_2\ N_2, H_2$ (ii) CO, H_2
(iii) H_2, CH_4 (iv) C_2H_2, CO_2, H_2

Cont...

SECTION - B (25 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 5 = 25)

11 a. Describe the principles of Soxhlet extraction method.

OR

b. Explain thin layer chromatography.

12 a. Explain the grinding and concentration processes.

OR

b. Describe the electromagnetic separation process.

13 a. Explain the preparation and properties of nitro arenes.

OR

b. Discuss the preparation and properties of diazoacetic ester.

14 a. Describe the mechanism of racemization.

OR

b. Briefly explain geometrical isomerism of oximes.

15 a. Define the following terms.
i. Octane number ii. Flash point iii. Catalytic cracking.

OR

b. Explain the manufacture and uses of producer gas.

SECTION -C (40 Marks)

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

16 a. Discuss the theory and techniques of HPLC.

OR

b. Describe the theory and techniques of ion-exchange chromatography.

17 a. Discuss the occurrence, extraction and uses of Titanium.

OR

b. Discuss the occurrence, extraction and uses of Vanadium.

18 a. Explain the separation of mixture of primary, secondary and tertiary amines.

OR

b. Discuss the reductive amination of aldehydic and ketonic compounds.

19 a. Explain the chiral and achiral molecules with example.

OR

b. Explain the optical activity of biphenyls and allenes.

20 a. Explain the refining of petroleum.

OR

b. i. Describe the production of bio gas. (4)
ii. Explain the advantages of catalytic cracking over thermal cracking. (4)

Z-Z-Z END