

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

BSc DEGREE EXAMINATION DECEMBER 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 more effective when the extraction is repeated with:

(i) Extra solvent	(ii) Large solvent
(iii) Small solvent	(iv) No solvent

2. Which of the following cannot be used as an adsorbent in Column adsorption chromatography?

(i) Magnesium oxide	(ii) Silica gel
(iii) Activated alumina	(iv) Potassium permanganate

3. Froth floatation is the most suitable for treating _____?

(i) Iron ores	(ii) Sulphide ores
(iii) Quartzite	(iv) None of these

4. Main function of roasting is

(i) To remove volatile substances	(ii) Oxidation
(iii) Reduction	(iv) Slag formation

5. Which of the following is used as a reactant for the nitration of benzene to form nitrobenzene?

(i) HNO ₂	(ii) HNO ₃
(iii) Mixture of HNO ₂ and HNO ₃	(iv) Mixture of HNO ₂ and H ₂ SO ₄

6. Amides may be converted into amines by a reaction named after

(i) Hofmann bromamide	(ii) Claisen
(iii) Perkin	(iv) Kekule

7. How many optical isomers are possible in a compound with one chiral carbon?

(i) 5	(ii) 4
(iii) 2	(iv) 3

8. Which of the following statements regarding enantiomers not true?
 - (i) All (+) enantiomers are levorotatory
 - (ii) All (-) enantiomers rotate plane polarized light in a counterclockwise direction
 - (iii) (+) and (-) enantiomers rotate plane polarized light in opposite directions
 - (iv) All R enantiomers are dextrorotatory

9. How is crude oil separated?

(i) Crystallization	(ii) Fractional distillation
(iii) Decantation	(iv) Sublimation

10. Water gas is a mixture of _____.

(i) Carbon monoxide and hydrogen	(ii) Carbon monoxide and oxygen
(iii) Hydrogen and oxygen	(iv) Hydrogen and nitrogen

Cont...

SECTION - B (25 Marks)

Answer ALL questions

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

11. a. Describe the principle of solvent extraction method.

Or

b. Discuss the types of chromatography.

12. a. Describe the Forth floatation process.

Or

b. Explain the calcination and roasting processes.

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

Or

b. Discuss the preparation and properties of diazomethane.

14. a. Describe the Walden inversion.

Or

b. Briefly explain on the optical activity of biphenyls.

15. a. Describe the thermal and catalytic cracking.

Or

b. Explain the manufacture and uses of water 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 column chromatography.

Or

b. Describe the theory and techniques of gas-liquid chromatography.

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

Or

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

18. a. Explain the mechanism of nucleophilic substitution reaction.

Or

b. Discuss the chemistry and structure of diazonium salts.

19. a. What is meant by resolution? Explain any two methods of resolution.

Or

b. Describe any three methods of distinguishing geometrical isomers.

20. a. Explain the distillation of crude petroleum.

Or

b. i. Describe the manufacture of producer gas (4)

ii. Explain the advantages of disadvantages of liquid fuel and gaseous fuel. (4)

Z-Z-Z

END