(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022 ONLY)

SUB CODE 22UCY405

REG.NO. :

N.G.M. COLLEGE (AUTONOMOUS): POLLACHI

END-OF-SEMESTER EXAMINATIONS: MAY 2024

B.Sc CHEMISTRY **MAXIMUM MARKS: 50**

SEMESTER: IV **TIME: 3 HOURS**

PART - III

INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY

SECTION – A **(10 X 1 = 10 MARKS)**

Answer the Following Questions **(K1)**

1. The pair in which both the elements generally show only one oxidation state is _____

a) Sc and Zn b) Zn and Cu c) Cu and Ag d) Zn and Au

2. Identify the process in the following when phenol is prepared from aryl halides. _____

a) hydrolysis b) decarboxylation c) oxidation d) Dow's process

3. Which of the following can show cis-trans isomerism?

a) malonic acid b) maleic acid c) succinic acid d) lactic acid

4. A liquid phase produces two solid phases during _____ reaction up on cooling.

a) Eutectic b) Eutectoid c) Peritectic d) Peritectoid

5. Nuclear biding energy is equivalent to _____

a) mass of proton b) mass of neutron c) mass of nucleus d) mass defect of nucleus

Answer the Following in One (Or) Two Sentences **(K2)**

6. Give the general electronic configuration of lanthanides.

7. What is nitro-acinitro tautomerism?

8. Define racemization.

9. Define phase rule.

10. What is nuclear fission reaction?

(COND..2)

SECTION – B (5 X 3 = 15 MARKS)

Answer Either (a) Or (b) in Each of the Following Questions. (K3)

11. a) Write a note on lanthanide contraction.

(OR)

b) Compare lanthanides with actinides.

12. a) Describe the mechanism of nitration of phenol.

(OR)

b) Write any two preparation reactions of nitromethane.

13. a) Justify the diazotization of aromatic amine.

(OR)

b) Describe optical isomerism in lactic acid.

14. a) Derive Gibbs phase rule.

(OR)

b) Draw the phase diagram of salt-water system with example.

15. a) Write a note on group displacement law.

(OR)

b) List the applications of radioactive isotopes in chemistry and medicine.

SECTION – C (5 X 5 = 25 MARKS)

Answer Either (a) Or (b) in Each of the Following Questions. (K4/ K5)

16. a) Explain the general comparison of 3d, 4d and 5d elements.

(OR)

b) Discuss the extraction of uranium from pitch blende.

17. a) Illustrate Reimer-Tiemann reaction with mechanism.

(OR)

b) Explain the reduction of nitrobenzene in neutral, acidic and alkaline medium.

18. a) Analyze the separation of mixture of amines.

(OR)

b) Explain conformational analysis of cyclohexane.

19. a) Draw and explain phase diagram of water.

(OR)

b) Construct the phase diagram of Pb-Ag system.

20. a) Explain n/p ratio.

(OR)

b) Discuss the principle and working of nuclear reactors.

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