



III Semester B.Sc. Examination, Nov./Dec. 2018
(NS) (2012-13 and Onwards)
(Repeaters) (Prior to 2015-16)
CHEMISTRY (Paper – III)

Time : 3 Hours

Max. Marks : 70

- Instructions :** 1) The question paper has **two** Parts. Answer **both** the Parts.
2) Draw diagrams and write chemical equations **wherever** necessary.

PART – A

Answer **any eight** of the following questions. Each question carries **two** marks.

(8×2=16)

1. Define zero order reaction.
2. What is mean life of a reaction ?
3. Give one difference between Schottky and Frenkel defects.
4. Define unit cell.
5. Write mathematical expression of Maxwell Boltzmann's law.
6. Mention the monomers of Nylon-66.
7. Write the general electronic configuration of lanthanides and actinides.
8. Mention any two ores of Uranium.
9. Explain Lucas test.
10. Define esterification.
11. What is salol? Write its structure.
12. Write the equation for the reaction of phenol with concentrated HNO_3 .

P.T.O.



PART - B

Answer **any nine** of the following questions. **Each** question carries **six** marks.

(9×6=54)

13. a) Derive an expression for the rate constant of a II order reaction when the concentration of reactants are not same ($a \neq b$).
b) Define half life period of a reaction. (4+2)
14. a) Explain half life period method for the determination of order of a reaction.
b) Write Arrhenius equation of rate constant. Explain the terms. (3+3)
15. a) Derive Bragg's equation.
b) Define axis of symmetry. (4+2)
16. a) What are liquid crystals ? Bring out the differences between Smetic and Nematic liquid crystals.
b) What is radius ratio of ionic solids ? (4+2)
17. a) Derive the relationship between critical constants and Van der waal's constants.
b) Define collision frequency. (4+2)
18. a) State the following :
1) Joule Thomson effect.
2) Law of corresponding states.
b) Calculate RMS velocity of SO_2 at 127°K . (4+2)
19. a) Write the equation for the preparation of :
i) Polythene
ii) Buna.S.rubber.
b) Write two differences between thermoplastics and thermosetting plastics. (4+2)



20. a) Explain the ion exchange method of separation of lanthanides.
b) Calculate the magnetic moment of Fe^{2+} ion. At. No. of Fe is 26. (4+2)
21. a) What is lanthanide contraction ? Write its consequences.
b) Write Darzen's reaction. (4+2)
22. a) Explain the extraction of Ni from Pentlandite.
b) Give any two applications of Ellingham's diagram. (4+2)
23. a) Explain the mechanism of Kolbe's reaction of phenol.
b) How carboxylic acids are synthesised from the Grignard reagent ? (4+2)
24. a) i) Explain Williamson's ether synthesis with an example.
ii) How ethyl alcohol is prepared from acetaldehyde ?
b) How is Aspirin prepared from phenol ? (4+2)
25. a) Explain the mechanism of oxidation of glycol by lead tetra acetate.
b) How is primary alcohol prepared by hydroboration-oxidation reaction ? (4+2)
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