SN – 336

III Semester B.Sc. Examination, Nov./Dec. 2017
(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. Write Arrhenius equation for the rate constant of a reaction and indicate the terms.
2. What are the factors that affect the rate of a reaction ?
3. Mention the co-ordination number of Na^+ in sodium chloride and co-ordination number of Zn^{2+} in ZnS.
4. What is meant by radius ratio of ionic crystals ?
5. Define the term "Root Mean Square Velocity" of a gas molecule.
6. What is vulcanisation of rubber ?
7. Carboxylic acids are more acidic than phenol. Explain.
8. Write a note on electrolytic refining of Nickel.
9. Explain esterification reaction with an example.
10. Write the general equation for the preparation of Glycerol from oils and fats.
11. What are epoxides ? Give an example.
12. Why d-block elements are called transition metals ?

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 velocity constant of a II order reaction. Where the initial concentrations of the reactants are same (a = b).

    b) The half life period for a II order reaction is 80 min, where the initial concentration of the reactants is 0.92 mol dm^{-3}. Calculate the value of the rate constant of the reaction. **(4+2)**

14. a) Explain Lindemann's hypothesis of unimolecular reaction.

    b) Explain how the order of a reaction is determined by half life period method. **(4+2)**

15. a) Describe the determination of structure of sodium chloride by rotating crystal method.

    b) Write a note on classification of liquid crystals. **(4+2)**

16. a) Derive Bragg's equation.

    b) Write a note on F-centers. **(4+2)**

17. a) Derive an expression for the most probable velocity from Maxwell's distribution of molecular velocities of a gas.

    b) State the law of corresponding states. **(4+2)**

18. a) Describe Linde's process of liquefaction of air.

    b) What is Ellingham's diagram ? How is it useful in metallurgy ? **(4+2)**

19. a) Explain Lucas test to distinguish between 1°, 2° and 3° alcohols.

    b) How is ethyl mercaptan prepared from ethyl alcohol ? **(4+2)**

20. a) Explain the mechanism of Kolbe-Schmidt reaction.

    b) How does Glycerol react with concentrated sulphuric acid. **(4+2)**

21. a) Write a note on separation of Lanthanides by ion exchange method.

    b) Compare d - and f - block elements with respect to magnetic property. **(4+2)**

22. a) Explain Williamson's ether synthesis with an example.

    b) How is diethyl ether converted to ethyl alcohol ?

    c) Why are organolithium compounds more reactive than Grignard reagents ? **(2+2+2)**

23. a) How is uranium extracted from pitchblende ?

    b) Give the chief ores of Nickel with composition. **(4+2)**

24. a) Distinguish between addition and condensation polymerisation.

    b) Define number average molecular weight of a polymer.

    c) Give two differences between inorganic polymers and organic polymers. **(2+2+2)**

25. a) What are interstitial compounds ? Give an example.

    b) Give the principle involved in Mond's process.

    c) How is propane synthesised from Grignard reagent ? **(2+2+2)**