III Semester B.Sc. Examination, March/April 2022
(CBCS)(2015 – 16 & Onwards) (F+R)
CHEMISTRY – III

Time : 3 Hours   Max. Marks : 70

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

PART – A

Answer **any eight** of the following questions. **Each** question carries
two marks.   (8×2=16)

1. Define temperature Coefficient of a reaction.

2. Write Arrhenius equation and explain the terms.

3. Give any two statements of II Law of thermodynamics.

4. What are spontaneous and non spontaneous process ?

5. What is adsorption isotherm ?

6. How is Teflon prepared ?

7. Why phenols are more acidic than alcohols ?

8. What are Ellingham diagrams ?

9. How is primary alcohol prepared by hydro-boration oxidation reaction ?

10. What happens when glycol is treated with periodic acid ? Give equation.

11. What are epoxides ? Give an example.

12. What is the function of Nitrogen in Plant nutrient ?

PART – B

Answer **any nine** of the following questions. **Each** question carries **six** marks.   (9×6=54)

13. a) Describe an expression for the rate constant ($a \neq b$).
    b) How is order of reaction determined by integration method ?   (4+2)

P.T.O.

14. a) Explain Lindmann hypothesis of Unimolecular reaction. (4+2)
    b) Give any two uses of Neoprene.

15. a) Derive Kirchoff's equation. (4+2)
    b) Explain the efficiency of heat engine working between 200K and 400K.

16. a) Derive the relationship between Cp and Cv. (4+2)
    b) Name the important ore of uranium and its composition.

17. a) Derive Gibb's-Helmholtz equation. (4+2)
    b) State III Law of thermodynamics.

18. a) How is thorium extracted from Monazite Ore. (4+2)
    b) Aluminium metal is used to reduce of chromium during its metallurgy, give reason.

19. a) How is glycerol prepared from oils and fats ? Explain with reaction. (4+2)
    b) How is methyl mercapton prepared from methyl alcohol ?

20. a) Explain the preparation of primary alcohol from (4+2)
        i) Carboxylic acids   ii) aldehydes.
    b) What is Lucas reagent ? Where it is used ?

21. a) Write the mechanism of Riemer-Tiemann reaction. (4+2)
    b) How is Phenol is converted into salol ?

22. a) Give two chemical reactions which shows that either can act as Lewis base. (4+2)
    b) Starting from Grignard reagent how Ketones are prepared.

23. a) Explain the manufacture of superphosphate of lime. (4+2)
    b) Name any two fertilizer industries in India.

24. a) Describe the structure of Diborane. (4+2)
    b) How are alkenes prepared from Organolithium compounds ?

25. a) Write a note on (4+2)
        i) Homogeneous catalysis.
        ii) Adsorption theory of heterogeneous catalyst.
    b) What is an adsorption indicator ? Give an example.