UN – 341

III Semester B.Sc. Examination, Nov./Dec. 2015
(Semester Scheme)
(OS) (Prior to 2012-13)
CHEMISTRY – III

Time : 3 Hours Max. Marks : 60

Instructions : *i) This question paper has **two** Parts. Answer **both** the Parts.*
*ii) Write chemical equation for **all** reactions.*

PART – A

Answer **any six** of the following questions. **Each** question carries **two** marks. **(6×2=12)**

1. Write reduced equation of state for a real gas, what do the symbols used stand for ?
2. Give the differences between inorganic and organic polymers.
3. Write the general electronic configuration of Lanthanides.
4. Name important ores of Nickel.
5. How does phenol reacts with concentrated HNO_3 ?
6. Write the IUPAC name of
   i) $CH_3\,CH_2\,S\,H$
   ii) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - OH$
7. State II Law of Thermodynamics.
8. What is zero order reaction ? Give example.
9. Define half life period.
10. Calculate E_a of a Reaction, If rate constant at 300 K is $2 \times 10^{-2}\ s^{-1}$ and at 350 K is $4 \times 10^{-2}\ s^{-1}$.

PART – B

Answer **any eight** questions of the following. **Each** question carries **six** marks. **(8×6=48)**

11. a) Define the terms : i) Critical Temperature ii) Most probable velocity.
    b) What is Joule-Thomson effect. **(4+2)**
12. a) Explain Linde's Process for the liquefaction of air.
    b) Write Maxwell-Boltzmann equation for gases. **(4+2)**

13. a) How do you Manufacture Terylene ? Give equation and mention the uses.
    b) What are Homopolymers ? Give example. **(4+2)**

14. a) How are following synthesised ?
        i) Neoprene ii) Poly Vinyl Chloride
    b) Calculate the Magnetic moment of
    Cu^{2+} ion (Atomic no. of Cu = 29) **(4+2)**

15. a) Give explanation for the following :
        i) Transition metals ions form coloured compounds
        ii) Transition metals exhibit variable oxidation state.
    b) What are transuranic elements ? Give example. **(4+2)**

16. a) Describe ion exchange method for the separation of lanthanides.
    b) What is Alumino Thermite Process ? **(4+2)**

17. a) Describe the extraction of Thorium from monozite.
    b) Write a note on Zone-Refining. **(4+2)**

18. a) How do you get following from phenol :
        i) Salicylic acid ii) Salicylaldehyde
    b) How does glycol reacts with periodic acid ? **(4+2)**

19. a) How do you get glycerol from propene ? Give reactions.
    b) How do you distinguish 1°, 2° and 3° alcohols by using Lucas Reagent ? **(4+2)**

20. a) Starting from Grignard reagent, How do you prepare ?
        i) Acetic Acid
        ii) Acetaldehyde.
    b) What is Williamson's ether synthesis ? **(4+2)**

21. a) Derive an expression for rate constant of II order reaction for equal concentration of reactants.
    b) Define energy of Activation. **(4+2)**

22. a) What are spontaneous and non-spontaneous processes ? Write the criterias for spontaneity of a process interms of ΔS and ΔG.
    b) State Nernst heat theorem. **(4+2)**