UN – 338

I Semester B.Sc. Examination, Nov./Dec. 2015
(CBCS) (F+R)
(2014-15 and Onwards)
CHEMISTRY – I

Time : 3 Hours

Max. Marks : 70

Instructions : *1) The question paper has* ***two*** *parts.*
2) Answer ***both*** *the parts.*
3) Draw diagram and write chemical equation ***wherever*** *necessary.*

PART-A

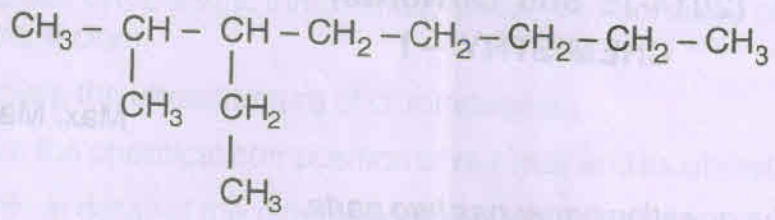
Answer **any eight** of the following question. **Each** question carries **two** marks. **(8×2=16)**

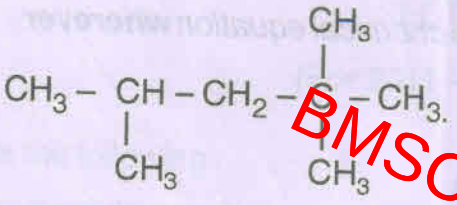
1. Define collision number of gas molecules.
2. log 2 = 0.3010 calculate the value of log 2^5.
3. Define critical temperature.
4. Explain the acidity of Alkynes.
5. Write any two applications of solvent extraction.
6. State Beer-Lambert's law.
7. Write any two applications of steam distillation.
8. Define the term electronegativity of an element.
9. What are alkaline earth metals ? Write its general electronic configuration.
10. Calculate normality of solution containing 1.25 g of $K_2Cr_2O_7$ in 250 cm^3 of solution (Eq. wt. = 49).

P.T.O.

11. What are Electrophiles ? Give examples.

12. Write IUPAC names of following :

i) 

ii) 

PART – B

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

13. a) Describe Linde's process for liquefaction of air.

b) Calculate C_{rms} of CO_2 gas at 27°C.
$[M_{CO_2} = 44\times10^{-3}$ Kg $R = 8.314$ JK^{-1} Mol$^{-1}]$

14. a) Write Maxwell-Boltzmann equation for molecular velocity and explain the terms.

b) Calculate critical pressure and critical volume. Given Van-der Waal's constant $a = 0.3639$ NM^4 Mol^{-2} $b = 4.27\times10^{-5}$ M^3 Mol^{-1}.

c) Evaluate $\int x^2\,dx$. (2×1)

15. a) Write note on phosphorescence.

b) What is Quantum Efficiency ? Give any one reason for high quantum yield.

c) Define Joule-Thomson co-efficient. (2×3)

16. a) Write Mathematical expression for viscosity of liquid and explain the factors affecting viscosity of liquid.

b) What is azeotropic mixture ? Give an example.

17. a) Explain Beckmann's method for the determination of Molecular Mass of a solute.

    b) 2.5 g of substance dissolved in 50 g of water lowered freezing point by 0.6 K, calculate the Motor Mass of the substance given K_f for water 1.86 K Kg mol^{-1}.

18. a) Define ionization energy. How does it varies in a period and group of periodic table ?

    b) Explain the properties of Alkali metal with respect to halide. (4+2)

19. a) Radius of an anion is larger than that of corresponding atom. Explain.

    b) How is electronegativity of an element determined by Pauling Method ? (2+4)

20. a) Draw the Newmann's Projection formulae of different conformation of n-butane and mention which form is more stable.

    b) State Stark-Einstein law. (4+2)

21. a) What is homolytic fission ? Explain with an example.

    b) Define the term Chiral centre. Give an example.

    c) What is carbonium ion ? Give an example. (2+2+2)

22. a) How is alkene prepared by Wittig Method ?

    b) What is Diels-Alder reaction ? Give equation.

    c) Write note on ozonolysis. (2+2+2)

23. a) How is alkane prepared by Corey-House Method ? Give an example.

    b) State Markownikoff rule and discuss its mechanism. (2+4)

24. a) Define the term error. What are the types of errors ?

    b) Define equivalent weight of an acid calculate Eq. wt. of H_2SO_4. [At wt. of H = 1, S = 32, O = 16]

    c) 8.0 of Glucose is dissolved in 100 cm^3 of water calculate the molarity of the solution. (2+2+2)

25. a) Differentiate x^3 w.r.t. to x.

    b) Write note on diagonal relationship between Be and Al.

    c) State Nernst distribution law. (2+2+2)