B. N. BANDOKAR COLLEGE OF SCIENCE, THANE – 400 601
A. T. K. T. EXAMINATION FEB – 2011
F. Y. B.Sc

DATE : **TIME : 3 hrs**

SUBJECT : CHEMISTRY – I

MARKS : 90

SECTION I

N. B. 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Use of log table / non-programmable calculator is allowed.

Q. 1 **A)** Give any **three** properties of amorphous solid. (3)

B) Attempt any **three** of the following:

1) Define surface tension of liquids. How is it measured by using Stalagmometer? (4)

2) State and explain laws of crystallography. (4)

3) What is an equation of state? Derive Vander Waals equation. (4)

4) State and explain the reason for deviation of gases from ideal behaviour. (4)

5) The viscosity of a liquid at 298 K is 0.084 Nsm^{-2} and its density is 1.1×10^{3} Kgm^{-3}. How long will it take to pass through a viscometer? if Water under the same condition takes 30 s ? (4)
(Viscosity of water = 0.00101 Nsm^{-2},
density of water = 0.99810×3 Kgm^{-3})

Q. 2 **A)** Explain sp^3 hybridization. (3)

B) Attempt any **three** of the following :

1) Discuss Hydrogen bonding with example. (4)

2) Explain sp^2 hybridization. (4)

3) Write structure of the following: (4)
a) 1,5- Heptadiene
b) 4, 4- Dimethyl pentanal
c) 2-amino ethanol
d) 3- methoxy propanoic acid

4) Write structure, properties and uses of diamond. (4)

5) Explain difference between sigma and pi bond. (4)

Q. 3 **A)** Write a short note on solubility product. (3)

B) Attempt any **three** of the following:

1) What is ionic strength ? discuss its relation with activity of ions. (4)

2) Explain the effect of pH on precipitation of sparingly Soluble metal hydroxide. (4)

3) Write importance of inorganic chemistry. (4)

4) What are the types of elements in the periodic table? (4)

5) What is electron affinity? Why electron affinity value of halogens is so high? (4)

SECTION II

Q. 4 **A)** Derive the half life time for second order reaction. (3)

B) Attempt any **three** of the following :

1) Derive an integrated rate equation for first order reaction. (4)

2) Explain the following: (4)

a) Photochemical smog.

b) Consequences of ozone depletion.

3) State the reasons for low and high quantum yield. (4)

4) Write a note on Flash photolysis. (4)

5) In a particular photochemical reaction, monochromatic radiations was Absorbed at a rate of 9.5×10^{-4} Js^{-1} if the wavelength of light used is 425 nm, calculate the number of photon absorbed in 10 minute. (4)

($h= 6.625\times10^{-34}$ Js, $c= 3\times10^{8}ms^{-1}$)

Q. 5 **A)** Define: (3)

a) Configuration

b) Chirality

c) Enantiomers

B) Attempt any **three** of the following :

1) What are the different types of isomerism. (4)

2) Explain Fisher projection formula. (4)

3) Explain with examples threo, erythro and meso compounds. (4)

4) Write a note on geometrical isomerism. (4)

5) Explain Markowinkoffs addition and Anti-Markowinkoff addition. (4)

Q. 6 **A)** Write the molecular formula of (3)

a) Lithium hydrido aluminate(III)

b)Diammine silver(I)chloride c) Sodium tetrachloro zincate (II)

B) Attempt any **three** of the following :

1) Explain EAN rule for $[Co(NH_3)_6]^{3+}$ (At no of Co= 27) (4)

2) Give an account of geometrical isomerism in four coordinate Complexes. (4)

3) Distinguish between ionization and linkage isomer. (4)

4) Explain trends in electronic configuration in group 13 element. (4)

5) What are electron deficient compounds. (4)