B.N. Bandodkar College of Science, Thane

F.Y.B.Sc - First Semester End Examination October 2011

USCH101

Duration 2 hrs Marks-60

N.B. All Questions are compulsory.
Figures to right indicate full marks.

Q.1) A) What are the deviations from Boyles law. 3

B) Attempt **ANY THREE** of the followings. 12

a) Explain the the reasons for deviation from ideal behaviour.
b) Give the applications of Vanderwaal's equation.
c) How is surface tension of liquid determined experimentally.
d) At 20^{o} C Water with a viscosity of 0.01 poise & density of 0.997 g/cm^3 takes 1.8 min to flow through the viscometer .Determine the time required by an organic liquid to flow through the same viscometer given its density to be 0.896 g/cm^3 and its viscosity to be 0.0059 poise.
e) What are Weiss & Miller indices.

Q2) A) What is an allotrope & What are the allotropes of Carbon 3

B) Attempt **ANY THREE** of the followings. 12

a) Explain hybridization of nitrogen.
b) Write short note on Fullerene.
c) Define the functional groups & Write the functional group of Acid, ester, anhydride.
d) Write the structure of butandial 3- chlorocyclopentanol,ethanal,&6-bromo-3-Hexanone.
e) Explain the inductive effect and types of inductive effect with example.

Q 3) A) The solubility of AgCl in water is 1.435×10^{-3} gdm^{-3} at 298K. calculate the solubility product of AgCl (M.W. of AgCl is 143.5) 3

B) Attempt **ANY THREE** of the followings. 12

a) Give the importance of Inorganic chemistry.
b) Explain the term ionization potential. How does it vary from
i) along a period ii) down the group

PTO

c) Describe the various types of qualitative analysis.

d) By using Mulliken's method, Calculate electronegativity of 'F' atom,
Given:- Ionization energy of 'F' is 17.14eV and electron affinity of 'F' is 3.45eV

e) Discuss 'effective nuclear charge'.

Q.4) A)

a) State Charles law 2

OR

b) Define critical temperature and critical pressure

c) Write short note on compressibility factor. 2

d) What is the unit of Surface Tension. 2

B) 1

a) Draw the structure of 2- bromo butanoyl chloride, propynal 2

OR

b) Draw the structure of 4- pentene-2-one & sodium ethanoate 2

c) Draw the structure of 2-phenyl-2-propanol, 2-naphthol 2

d) Draw the structure of p-bromo benzamide 1

C)

a) Write a short note on solubility product. 2

OR

b) Explain ionization potential. 2

c) Discuss ultramicroanalysis in qualitative method. 2

d) Define electronegativity. 1

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