Enroll No. _____

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)

Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER – 2016

B.Voc. Chemical Technology

BVCT-101 - FUNDAMENTAL CHEMISTRY-I

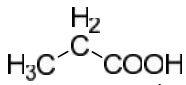
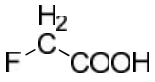
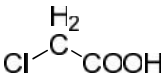
Duration of Exam – 3 hrs ***Semester – I*** ***Max. Marks – 70***

Que. 1 (A) – Answer the following Questions **[10]**

1. According to Henry's law, if the pressure is increased the solubility of gas in solution _____.
2. Give example of any one electrophile and one nucleophile.
3. Define acid and base according to Arrhenius Theory.
4. Distance between two Na atoms in crystal of sodium metal is 3.72 A. Calculate metallic radii of sodium.
5. Define the term: Electromagnetic Radiation.
6. Draw electronic configuration for Oxygen and show its lone pair of electrons in the figure.
7. Reaction of Fe metal with 0.5 M H_2SO_4 solution in a beaker is an example of _____ system.
8. Arrange following elements in decreasing order of their electronegativity: Li, N, F, Na
9. Calculate pH of 0.01M HCl.
10. Write any one test for identification of Halogen in given unknown compound.

Que. 1 (B) – Answer the following Questions **[20]**

1. Arrange following compounds in their decreasing order of acidity.

(i)  (ii)  (iii) 

2. Arrange elements of 2nd period of periodic table in increasing order of their Ionization Energy.
3. Explain with reason: Why halogens have highest electron affinity?
4. State both assumptions of Paulings method for determination of ionic radii.
5. State first law of thermodynamics.
6. What is Black body radiation? Enlist effect of temperature on blackbody radiation.
7. Calculate amount of methanol required to make 1 liter 24.5% v/v solution of methanol in water.
8. Write down test to identify acidic nature of an organic compound.
9. Calculate the normality of 0.1M $KMnO_4$ solution.
10. Give examples of 1 acid and 1 base for all 3 concepts (theories) of acid-base.

Que. 2 – Answer the following Questions (Any Four) **[20]**

1. Calculate ionic radius of Na^+ and F^- in NaF crystal. Inter-nuclear distance d(NaF) = 2.31A and screening constant S = 4.15.

2. What is ionization energy? Explain trends of Ionization energy in periodic table.

3. Explain photoelectric effect in detail.

4. Describe in detail: Ionization Energy and its periodicity.

5. Describe types of thermodynamic processes.

6. How will you identify following functional groups in the given compound? (a) ketone (b) ester, and (c) amine.

Que. 3 – Answer the following Questions (Any Four) **[20]**

1. Give the classification of electrophiles with example.

2. Density of 38% w/w H_2SO_4 at 25℃ is 1.281 gm/ml. Calculate weight of pure H_2SO_4 in 1 liter.

3. State and explain all three rules for electron configuration with example.

4. Define and classify buffers with example.

5. Aniline and phenol are ortho-para directing groups. True or False? Justify your answer with illustration.

6. Find the pH of a buffer solution containing 0.20 moles per liter CH3COONa and 0.15 mole per liter CH3COOH. Note that Ka for acetic acid is 1.8×10^{-5}