

Vitthalbhai Patel & Rajratna P. T. Patel Science College,
Vallabh Vidyanagar
B. Sc. (Semester-I)
Subject : GENERAL CHEMISTRY-I (US01CCHE21)

Date : 01-10-2018
Day : Monday

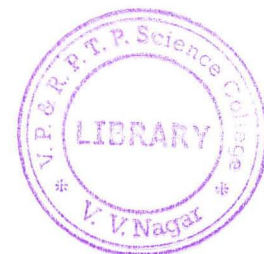
Internal Test

Marks : 50
Time : 12.30 to 2.30 p.m.

Note: (i) All questions are to be attempted.
(ii) Figures to the right indicate marks.

Q.1 Choose the correct option for the following : [08]

- (i) Disappearance of purple colour of dil. KMnO_4 in its reaction with alkene is known as :
(a) Bayer's test (b) Saytzeff test (c) Grignard reaction (d) Iodoform test
- (ii) Addition of HBr in presence of peroxide to alkene follows
(a) Markonikov's rule (b) Anti-Markonikov's rule
(c) Satyzeff rule (d) None of these
- (iii) Which is the more fundamental property of the elements ?
(a) Atomic weight (b) Ionic radius (c) Atomic number (d) Ionization energy
- (iv) elements does not form ionic compound readily.
(a) Be (b) Sr (c) Ca (d) Mg
- (v) A substance having tendency to lose H^+ is called
(a) Lewis acid (b) Arrhenius acid
(c) Lowry-Bronsted acid (d) Conjugate base
- (vi) A weak base has strong conjugate
(a) acid (b) base (c) neutral (d) salt
- (vii) Which of the following method is based on amount of sample?
(a) proximate analysis (b) partial analysis
(c) complete analysis (d) macro analysis
- (viii) The degree of closeness between measured value and true value is
(a) accuracy (b) precision (c) method (d) analysis



Q.2 Answer the following (Attempt any Five) : [10]

- (i) 1-Butyne gives white precipitation with Tollen's reagent while 2-butyne does not. Why?
- (ii) Explain: Boiling point of n-butane is higher than iso-butane.
- (iii) Define: (i) Ionization energy (ii) Shielding effect
- (iv) Explain: Successive ionization energy is always higher than preceding one.
- (v) What is the conjugate base of the following ions or compound?
(i) HS^- (ii) H_3O^+ (iii) H_2SO_4 (iv) NH_3
- (vi) What is common ion effect ?
- (vii) "Precision always accompanies accuracy but high degree of precision does not mean accuracy" Justify the statement.
- (viii) Discuss advantages and disadvantages of chemical method.

- Q.3 Answer the following:** [08]
[a] Calculate the percentage of isomeric products obtained upon monochlorination of n-pentane. The relative reactivity of 1^o, 2^o and 3^o H are 1: 3.8: 5 respectively.
[b] Define chain reaction. Write reaction mechanism for the bromination of ethane.

OR

- Q.3 Answer the following:** [08]
[a] Arrange the boiling point of following molecules in the increasing order of boiling point and explain your answer.
(a) Pentane (b) Isopentane (c) Neopentane.
[b] Write reaction mechanism for the Addition of Br₂ /H₂O to alkene.

- Q.4 Answer the following :** [08]
[a] Discuss the long form of periodic table.
[b] Calculate the screening constant and effective nuclear charge on 4s electron of
(i) Mn (Z = 25) (ii) K (Z= 19)

OR

- Q.4 Answer the following:** [08]
[a] Discuss the factors affecting magnitude of ionization energy.
[b] On the basis of Hannay and Smith equation calculate the percentage ionic character in gaseous HF and HCl. (Given: $\chi_F = 4.0$, $\chi_{Cl} = 3.2$, $\chi_H = 2.2$)

- Q.5 Answer the following :** [08]
[a] What is hydrolysis ? Derive an equation correlating K_h and K_w for a sodium acetate in water.
[b] The solubility product of Lead sulphate is 1.8×10^{-8} . Calculate the solubility of Lead sulphate in (i) Pure water (ii) 0.1M Pb(NO₃)₂ solution

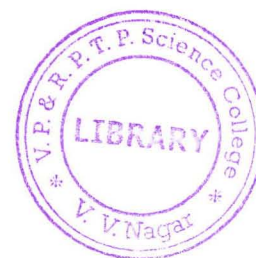
OR

- Q.5 Answer the following :** [08]
[a] Write note on selective precipitation with suitable example.
[b] A saturated solution of La(IO₃)₃ in pure water has a concentration of iodate ion equal to 2.07×10^{-3} M at 25 °C. What is the concentration of La⁺³ ion ? Calculate the solubility product of La(IO₃)₃ .

- Q.6 Answer the following :** [08]
[a] During iron estimation of the sample the results obtained are 8.0, 8.2, 8.4, 8.5, 9.6 ppm. Check whether the questionable value 9.6 should be rejected or not. [Q_{crit} = 0.710].
[b] From the following results, calculate mean, standard deviation, relative standard deviation and variance. 29.8, 30.2, 28.6, 29.7%

OR

- Q.6 Answer the following :**
[a] Give classification of chemical analysis.
[b] What is sampling? Discuss sampling of solid, liquid and gas.



— x — x —