

A Charutar Vidya Mandal's Institution
V.P. & R.P.T.P. SCIENCE COLLEGE
 (AUTONOMOUS) (Grant-in-Aid)
 Affiliated to Sardar Patel University
 VALLABH VIDYANAGAR-388120



Bachelor of Science (Semester 1) External Examination - 2024
 Subject Code: US01MAICV01 - Applied Chemistry

Date: 19-11-2024, Tuesday
 Time: 11:00 am to 01:30 pm

Total pages: 02
 Total Marks: 50

NOTE: Figure to the right indicate full marks of the questions.

Q. 1 Multiple Choice Questions. (All are compulsory)

[10]

1. When we move from left to right across a period, electronegativity generally ...

- (a) Increases (b) Decreases
 (c) Decreases and then increases (d) Remain constant

2. "Electrons occupy orbitals starting at the lowest energy level and sequentially fill higher orbital energy levels". It is the statement of...

- (a) Aufbau principle (b) Pauli's Exclusion principle
 (c) Hund's principle (d) Uncertainty principle

3. Which molecule from the below give intermolecular H-bond?

- (a) R-O-R (b) R-OH (c) R-SH (d) R-CO-R

4. Which of the following is most stable carbocation?

- (a) CH_3^+ (b) $(\text{H}_3\text{C})_3\text{C}^+$ (c) $(\text{H}_3\text{C})_2\text{CH}^+$ (d) $\text{CH}_3\text{-CH}_2^+$

5. Homolytic fission leads to the formation of...

- (a) Nucleophiles (b) Carbanions (c) Free radicals (d) Carbocations

6. The total of mole fractions of all components of a solution equals to _____.

- (a) 100 (b) 1 (c) 0.1 (d) 0.01

7. _____ is defined as total moles of a solute dissolved in one liter of solution.

- (a) Normality (b) Molarity (c) Molality (d) Mole fraction

8. The pH range of methyl orange as an indicator is...

- (a) 3-5 (b) 8-9 (c) 1-4 (d) 6-8

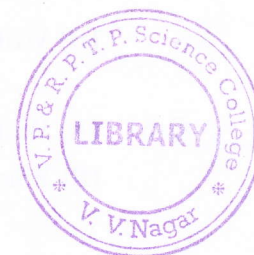
9. Which of the following is titrant in complexometric titration?

- (a) FeSO_4 (b) Na_2CO_3
 (c) Benzoic acid (d) Disodium salt of ethylenediaminetetraacetic acid

10. Which one is known as multiple range indicators?

- (a) Universal indicator (b) Mixed indicator
 (c) True indicator (d) Replacement indicator

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P.T.O

- Q-2 (A) Write a note on Ionization energy. [5]
(B) Write a note on Electronegativity. [5]

OR

- Q-2 Describe various Postulates and Limitation of Rutherford Atomic Model. [10]

- Q-3 Write a note on carbanions and carbocations in detail. [10]

OR

- Q-3 (A) Write a short note on Inductive effect. [5]
(B) Explain Hydrogen bonds in details. [5]

- Q-4 Explain different method used to express the composition of mixtures and solutions. [10]

OR

- Q-4 (A) An aqueous solution of K_2CO_3 is prepared by dissolving 43 kg of K_2CO_3 in 100 kg of water at 293 K ($20^\circ C$). Calculate normality, molarity and molality of the solution. Density of the solution is 1.3 kg/l. (Atomic weight data: K-39, C-12, O-16). [5]
(B) Write the comparison of ideal and non-ideal solutions. [5]

- Q-5 (A) Write a note on Primary and Secondary Standards. [5]
(B) What is an indicator? Discuss about 'Universal Indicators'. [5]

OR

- Q-5 (A) What are Titrant, Titrand, End point, Equivalence point and titrimetric analysis. [5]
(B) Explain the neutralization curve for a Strong acid with a Strong base titration. [5]

___ Good Luck ___

