



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Fourth Semester – 2019

Paper: Chemistry-IV (General Chemistry)

Course Code: CHEM-203/CHM-22304 Part-I (Compulsory) Time: 15 Min. Marks: 10

Roll No. In Fig.

Roll No. in Words.

Signature of Supdt.

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer cutting and overwriting is not allowed. (10x1=10)

- i) Wave-particle duality of electron was verified by
- De-Broglie
 - Davisson & Germer
 - Heisenberg
 - Both a & b
- ii) Electronic transition between Sigma bonding and Sigma antibonding molecular orbital is a/an _____ transition
- Allowed
 - Forbidden
 - d-d transition
 - None of these
- iii) Which of the following is the correct relation
- $A = \log\left(\frac{I_0}{I}\right)$
 - $A = \log\left(\frac{I}{I_0}\right)$
 - $A = \log\left(\frac{I_0 - I}{I}\right)$
 - $A = \log\left(\frac{I - I_0}{I}\right)$
- iv) Which of the following catalyst can be used for nucleophilic addition reactions of carbonyl compounds
- HCl
 - NaOH
 - Both (a) and (b)
 - Neither (a) nor (b)
- v) The value separating the higher half from the lower half of a data set is called _____
- Mean
 - Mode
 - Median
 - All of these

P.T.O.

- vi) The most widely used flame for Atomic absorption is
- Air-Natural gas
 - Air-Acetylene
 - Air-Propane
 - Air-Hydrogen
- vii) Which of the following gives positive bisulphite test
- Formic acid
 - Methanol
 - Dimethyl ether
 - Ethanal
- viii) All are correct about metallic conduction except
- Involve free electrons
 - Decrease by increase in temperature
 - It is a chemical change
 - Conducts through electrodes
- ix) In dilute electrolytic solution, each ion migrates independently of its co-ion is the concept of
- Kohlrausch's Law
 - Faraday's 1st Law
 - Ostwald's Dilution Law
 - Faraday's 2nd Law
- x) Consider the following data for Elements X, Y and Z
- X. $E_{\text{oxd}} = +0.76\text{V}$
Y. $E_{\text{red}} = +0.34\text{V}$
Z. $E_{\text{red}} = -1.67\text{V}$
- Which of the following is the correct increasing order of strength as reducing agent.
- $Z < Y < X$
 - $X < Y < Z$
 - $Y < X < Z$
 - $Z < X < Y$



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2 Short Questions

2x10 = 20

- i. Give two chemical tests of aldehydes and ketones.
- ii. Compare the reactivity of aldehydes and ketones.
- iii. How wave-particle duality of electron was verified?
- iv. What are probability functions?
- v. State Faraday's 1st Law of electrolysis.
- vi. Give the construction and working of Standard Hydrogen Electrode.
- vii. What are systematic and random errors?
- viii. State Law of mass action and give its mathematical statement.
- ix. State Beer-Lambert's Law.
- x. Compare the strength of Aliphatic and Aromatic Carboxylic acids.

Q.3 Extensive Questions

30

- a) Explain the construction and working of UV/Vis spectrophotometer. (5)
- b) What are Buffers? Give its types. How it controls the pH of solution? (5)
- c) Explain Photoelectric effect and Compton Effect. (5)
- d) Derive an expression for the Energy of electron in valence shell of hydrogen atom. Also give two defects of Bohr's atomic model. (5)
- e) What is Transference Number? Explain Hittort's method for the determination of Transference Number (5)
- f) Explain Wittig Reaction along with its mechanism (5)

