



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) The degree of ionization of a substance depends on
 - a) quantity of electricity passed
 - b) nature of solute molecules
 - b) size of solute molecules
 - c) nature of vessel used
- ii) The rate constant of a reaction is dependent on
 - a) Time
 - b) temperatur
 - c)Extent of reaction
 - d)initial conc. Of reactant
- iii) In galvanic cell
 - a) chemical energy is converted into heat .
 - b) electrical energy is converted into heat.
 - c)chemical energy is converted into electrical energy.
 - d)electrical energy is converted into chemical enemical .
- iv) The photochemical reaction between hydrogen and chlorine on the surface of water is a reaction of
 - a) zero order
 - b) first order
 - c) second order
 - d) third order
- v) The activation energy of a reaction is zero . The rate constant of reaction
 - a) increased with increased of temperature.
 - b) decreased with increased of temperature.
 - c) decreased with decreased of temperature.
 - d) is nearly independent of temperature.

vi) The wave property is associated with a particle having

- a) a small mass and velocity
- b) small mass and large velocity
- c) large mass and small velocity
- d) large mass and velocity

vii) The momentum of a photon is

- a) increases as the wavelength decreases.
- b) increases as the frequency decreases.
- c) depends upon its speed.
- d) depends on Planck's constant.

viii) Hamiltonian operator include the term of energy

- a) kinetic energy b) internal energy
- c) potential energy c) none energy

ix) Schrodinger wave equation is based on the concept of wave produce by moving electron is

- a) sound wave b) longitudinal wave
- c) standing wave d) all of above

x) The probability for finding the particle in one dimension box corresponds to ψ^2 and its values at the boundary of the box is

- a) one b) maximum
- c) minimum d) zero



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Give short answers of the following:

(10x2=20)

- i) Calculate half life of third order reaction?
- ii) what is the difference of ionization and dissociation?
- iii) What is Hameltonian Operator?
- iv) How ionic strength of a solution can be determined?
- v) What is fuel cell? Give its advantages.
- vi) Differentiate between specific and equivalent conductance?
- vii) What is side reaction? Give two examples of second order side reaction.
- viii) Give significance of Azimuthal quantum number?
- ix) What is meant by composite rate constant?
- x) Give various steps in thermal decomposition of acetaldehyde?

Q.3. Give brief answers of the followings.

(3x10=30)

1. (a) Derive a relation for Debye Huckel Theory for weak Electrolyte? (5)
- (b) What is activity coefficient?(2)
- (c) Write a note on hydrogen fuel cell?(3)
2. (a) Discuss the concept of normalization wave function.(3)
- (b) Derive Schrodinger wave equation on H-atom and also derive Azimuthal quantum number.(7)
3. (a) What are Opposed reaction?(2)
- (b) What is Consecutive reaction? Derive a rate expression for it.(8)