



**Shree H.N.Shukla Group of
Colleges**
B . Sc. (Sem-VI) (CBCS) (Unit Test)

C-602: Physical & Analytical Chemistry

Time: 1.5 hours

Date: 12/04/2021

Total Marks: 30

Instructions

- 1. All Question are compulsory.**
- 2. Figure to the right indicate the full marks of Questions.**

Q.1 (A) Answer the Following.

[01]

- (i) Which type of energy conversion take place in “concentration cells”
- (ii) Define Transport number?
- (iii) Which electrolyte solution are used in salt bridge?
- (iv) Define
 - (a) Salt bridge
 - (b) Sparingly soluble salt.
- (v) What is “Quinhydrone electrode”?

(B) Answer the Following (any one).

[02]

- (i) Write cell reaction take place on “gas electrode concentration cell”?
- (ii) Give difference between **Galvanic cell** and **Concentration cell**.

(C) Answer the Following (any one).

[03]

- (i) Explain Glass electrode used for determining P^H of a solution.
- (ii) Short note on Liquid Junction Potential (LJP).

(D) Answer the Following (any one). [05]

(i) Describe the determination of dissociation constant of weak acid by E.M.F. method

(ii) Explain concentration cell with transference

$$E_{w.o.t} = \frac{RT}{F} \ln(a_2/a_1)$$

Q.2 (A) Answer the Following. [01]

(I) Give the principle of potentiometry method.

(II) Why saturated calomel electrode is useful?

(III) Give the characteristics of glass bulb in glass electrode.

(IV) Give the types of reference electrode with example.

(V) Give the formula of cell to know P'' of unknown solution.

(B) Answer the Following (any one). [02]

(I) What is relationship between equilibrium constant, **K_{sp}** and end point in argentometry?

(II) Explain Redox electrode.

(C) Answer the Following (any one). [3]

(I) Write short note on calomel electrode.

(II) Give the definition of pH, pH metric titration and temperature scale.

(D) Answer the Following (any one). [05]

(I) How to separate **Cu⁺²** and **Cd⁺²** by any one method.

(II) Discuss the Argentometry / precipitation titration by potentiometry.

(III) Explain the weak acid-strong base titration curve by pH metry.

OR

How the dissociation constant of weak acid can be calculated using pH metry?