



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

C-603: Physical & Analytical Chemistry

Time: 1.5 hours

Date: /04/2021

Total Marks: 30

Instructions

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

Q.1 (A) Answer the Following [01]

- 1) What is the relation between activity and concentration for a very dilute solution?
- 2) What is the relation between mean activity coefficient and mean ionic activity of Na_2SO_4 and AlCl_3 .
- 3) What is the ionic strength of 0.001 molar NaCl solutions?
- 4) Define “absolute zero temperature “from 3 rd law of thermodynamics.
- 5) For a phase conversation “solid to liquid” give an expression to calculate entropy change.

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

- 1) What is the relation between activity and mean activity coefficient of sodium sulphate? ($a_{\pm} = f_{\pm} C^{4/3}$)
- 2) State the Nernst heat theorem with its mathematical form.

(C) Answer the Following (any one). [03]

- 1) Calculate \mathcal{M} (ionic strength) of solution. When 12 gram NaOH is dissolved in 3 kg of water.
- 2) Application of third law of thermodynamics. Explain.

(D) Answer the Following (any one).

[05]

- 1) Write Debye Huckel limiting law equations and explain empirical correction of the law.
- 2) How can we measure the absolute value of entropy of any substance at its boiling point? Explain with the help of the third law of thermodynamics.

Q.2 (A) Answer the Following

[01]

- (1) What is meant by R_f and R_x value?
- (2) Write name of partition chromatography.
- (3) Give the name of carrier gas use in GC?
- (4) Who scientists give Chromatography?
- (5) Define stationary phase and mobile phase.

(B) Answer the Following (any one).

[02]

- (1) Explain advantages of TLC over other chromatography.
- (2) Explain selection of carrier gas for GLC

(C) Answer the Following (any one).

[03]

- (1) What is Chromatography? Give its classification in detail.
- (2) Separation of carotene in the carrot using column chromatography.

(D) Answer the Following (any one).

[05]

- (1) Describe Ion exchange chromatography
- (2) Describe Gas Chromatography (GC)