M.Sc. (Chemistry) Sem. 4 : નોંધ : P.No. 14 2 / OCT 2021 Sub. Code. 35[illegible]

૧. દરેક પ્રશ્નનો [a] અથવા [a(i)] અને [a(ii)] જ લખવાના રહેશે.
૨. પ્રશ્ન : ૧[a] અથવા ૧[a(i)] અને ૧[a(ii)] તથા ૨[a] અથવા ૨[a(i)] અને ૨[a(ii)] ના **14** માર્કસ ના બદલે ૧૮ માર્કસ રહેશે.
૩. પ્રશ્ન : ૩[a] અથવા ૩[a(i)] અને ૩[a(ii)] તથા ૪[a] અથવા ૪[a(i)] અને ૪[a(ii)] ના **14** માર્કસ ના બદલે ૧૭ માર્કસ રહેશે.
૪. દરેક પ્રશ્નનો પ્રશ્ન નં ૧(**b**), પ્રશ્ન નં ૨(**b**), પ્રશ્ન નં ૩(**b**) તથા પ્રશ્ન નં ૪(**b**) (ટુંકા પ્રશ્નો) વિદ્યાર્થીએ લખવાના નથી.

1 (A) Define conductor and give its classification with suitable examples. 14

OR

1 (A) (i) How solvent can influence dissociation? Explain in detail. 07

1 (A) (ii) Write atleast four evidences in support for the ionic theory. 07

1 (B) Answer the following questions (Any **four** out of six) 04

(i) What are differentiating solvents?
(ii) What is voltaic cell?
(iii) Name the apparatus proposed by Richards and Heimrod in1902.
(iv) Who proposed the theory of active molecules?
(v) Write empirical equation proposed by van't Hoff having factor 'i'.
(vi) Define the term potential difference.

2 (A) Discuss the theory: The mechanism of electrolytic conductance. 14

OR

2 (A) (i) Write notes on transference numbers in mixtures. 07

2 (A) (ii) Explain 'Time of Relaxation of ionic atmosphere' in details. 07

2 (B) Answer the following questions (Any **four** out of six) 04

(i) What is asymmetry effect?
(ii) What are abnormal transference numbers?
(iii) Draw diagram of improved version of Hittorf apparatus.
(iv) Name the scientists who worked on interionic attraction theory.
(v) What is an ionic atmosphere?
(vi) Write final equation of the ionic atmosphere representing thickness.

3 (A) Explain in detail the dissociation constants of amino acids. 14

OR

3 (A) (i)Write note on neutralization curves of ampholytes. 07

3 (A) (ii) Explain the determination of dissociation constants by any methods. 07

3 (B) Answer the following questions (Any **three** out of five) 03

(i) What are amphiprotic solvents? Give two examples of it.
(ii) Give definition of acids as per Lewis.
(iii) Define super acid solutions.
(iv) What are zwitterions?
(v) Define isoelectric point.

4 (A) How anode and cathode potentials can be determine? Explain the method and apparatus associate with this determination. 14

OR

4 (A) (i) Explain the thickness of the diffusion layer. 07

4 (A) (ii) Discuss the influence of current density on overvoltage. 07

4 (B) Answer the following questions (Any **three** out of five) 03

(i) Define dissolution potential.

(ii) What are irreversible electrode phenomena?

(iii) Give definition of concentration polarization.

(iv) What is decomposition voltage?

(v) Define: Limiting current density.