



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2020

Paper: Analytical Chemistry (Sp. Theory-I)
Course Code: CHEM-431 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 correct option.

(10x1=10)

(i) In Ilkovic equation the value of k for average current is?

- (a) 507 (b) 607 (c) 708 (d) 808

(ii) Reference electrode in polarography is?

- (a) Polarizable (b) Non-polarizable (c) Both a & b (d) None of these

(iii) Convection current in polarography is minimized by?

- (a) Addition of KCl (b) Unstirred solution (c) dropping mercury (d) All of the above

(iv) The drop life of mercury in dropping mercuric voltammetry is:

- (a) 1 sec (b) 2-5 sec (c) 6-8 sec (d) 7-10 sec

(v) Amperometry is applicable in the voltage range:

- (a) +0.4 to -1.8 V (b) -0.1 to +1.8 V (c) +0.4 to -3.8V (d) -1.4 to 1.8 V

(vi) Which enzyme is used in glucose biosensor?

- (a) Glucose oxidase (b) Glucose dehydrogenase (c) Glucose hydrogenase (d) Both a and b

(vii) At infinite dilution each ion contribute definite amount of conductance to total conductance irrespective nature of other ions is called?

- (a) Ohm's Law (b) Kohlrausch law (c) Ostwald's Law (d) Henry's Law

(viii) If the ion size is decrease in solutions:

- (a) Conductance decrease (b) Conductance increase (c) Both a & b (d) None of the above

(ix) In arc or spark spectroscopy non-conductive sample is mixed with _____ to make it conductive:

- (a) Graphite (b) Germanium (c) Gold (d) Copper

(x) Arc and Spark sources are used in:

- (a) Optical Emission Spectroscopy (b) X-Ray Diffraction Spectroscopy
(c) IR Spectroscopy (d) UV – Visible Spectroscopy



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Give short answers to the following questions. (10x2=20)

- i - What is the effect of dilution on Specific conductance? Give reason also.
- ii- What is the basic principle of Anodic stripping voltammetry?
- iii- What is Ilkovich equation? Give its significance.
- iv- Give application of conductometry in precipitation titrations?
- v- Give difference between molar conductance and specific conductance?
- vi- What do you mean by cyclic voltammetry?
- vii- Give the changes in conductance in the titration of mixture of HCl and acetic acid with NaOH?.
- viii- What is cell constant? What is relation between conductivity of cell and cell constant?
- ix- What different arc and spark sources used in spectroscopy?
- x- Give three advantages of DME?

Answers to the following questions. (3x10=30)

- Q.3 (a) Discuss quantitative applications of anodic stripping voltammetry. (5)
- (b) Write a note on conductometric titrations of strong acid with NaOH and NH₄OH. (5)
- Q.4 (a) Discuss electrodeposition step and voltammetric completion step in voltammetry. (5)
- (b) Discuss half wave potential. What information is obtained from polarographic curve? (5)
- Q.5- (a) Write a note on spark sources. (5)
- (b) Write note on Qualitative aspect of polarographic analysis (5)