



B.Sc. (Semester – V) Examination, Oct./Nov. 2018
CHEMISTRY (Paper – IV) (6 Units)
Analytical Chemistry

Duration : 2 Hours

Total Marks : 80

- Instructions :**
- 1) Answers to the **two** Sections should be written on **separate** answer books.
 - 2) Figures to the **right** indicate **full** marks.
 - 3) Use of non-programmable calculator is **allowed**.
 - 4) Log table will be supplied on request.
 - 5) **All** questions are **compulsory**, however **internal choice** is available.

SECTION – I

40 Marks

1. Answer **any four** of the following : **(4×4=16)**
- a) What is the function of output transducers or read out devices used in instruments ? Give two examples.
 - b) Define bulk ratio and size to weight ratio.
 - c) Distinguish between accuracy and precision.
 - d) What are confidence limits ? Why are they required ?
 - e) How metals are extracted in organic phase using complexing agents ?
 - f) Explain gross error with example.
2. A) i) Explain signal generators with examples. **3**
- ii) Round off the results of following numbers to the proper significant figures. **3**
- a) 10.5204 (reject 4) b) 10.5215 (reject 5) c) 10.5225 (reject 5)

OR

- A) i) Explain dynamic method used in sampling of gases. **3**
- ii) Explain why multistage extraction is preferred to single stage extraction in solvent extraction. **3**

P.T.O.



- B) A student obtained the following results for the normality of a solution ;
0.1031, 0.1033, 0.1032 and 0.1040. Can the last result be rejected on the basis of
i) 2.5 d rule ii) 4.0 d rule and iii) Q test ? 6

3. A) i) What is student's T test ? How is it applied ? 3

- ii) In the context of solvent extraction, calculate the number of extractions (n)
if, $D = 2.3$, $V_o = 10$ mL, $V_w = 25$ mL, % Extraction (E) = 99%. 3

OR

- A) i) What is F test ? When is it applied ? 3

- ii) Explain salient features of normal error curve. 3

- B) For the set observations given in the following table, derive an equation of
the type $y = mx + c$ by the method averages. Assume linear relationship
between the variables. 6

x	1	2	3	4	5	6	7
y	2.8	4.2	5.2	6.4	6.8	7.8	9.0

SECTION – II

40 Marks

4. Answer the following questions (**any four**) : (4×4=16)

- i) With a neat labeled diagram describe hydrogen - oxygen coulometer.
- ii) Why is it necessary to pass inert gas through the experimental solution before electrolysis in Polarography ?
- iii) Discuss the potentiometric acid base and precipitation titrations.
- iv) Discuss the principle of Flame photometry.
- v) How does the Atomic Absorption Spectroscopy used in identification and quantitative analysis of elements ?
- vi) With suitable examples, illustrate the different types of titration curves obtained in Amperometric titration.

5. A) i) Represent and describe briefly a polarographic wave. 4

- ii) Enumerate the advantages of Atomic Absorption Spectroscopy over Flame photometry. 2

OR



- A) iii) Discuss the general characteristics of coulometric methods. 4
iv) Draw a labeled diagram of rotating platinum microelectrode. 2
- B) i) How does the potentiometric titrations are carried out ? 4
ii) What is an Inducted Coupled Plasma ? 2
6. A) i) How does the copper is determined by constant current electrolysis ? 4
ii) What is indicator electrode ? 2

OR

- A) iii) What is electrogravimetric analysis ? State the Faraday's laws of electrolysis. 4
iv) Explain the method of circle fitting location of equivalence point from the graph of E v/s V in Potentiometric titration. 2
- B) i) Discuss the limitations of Flame photometry. 4
ii) Diagrammatically represent Amperometric titration setup 2
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