

18. (a) Discuss briefly the applications of ion exchange chromatography in organic, inorganic and biological fields.

Or

- (b) Describe the various techniques employed for the development of chromatoplates in TLC.
19. (a) Discuss the measurement of the counting efficiency of the counting arrangement for the decay of ^{234}Pa .

Or

- (b) Write notes on :
- (i) Determination of the absorption curve for ^{234}Th - ^{234}Pa sample.
- (ii) Special precautions for radiochemical studies.
20. (a) Calculate mean deviation, standard deviation and coefficient of variance for the following data :

Trial No. :	1	2	3	4	5	6
Iodine value :	175	181	169	178	183	164

Or

- (b) Explain briefly Q , t and F tests.

Reg. No. :

Code No. : 7169

Sub. Code : C 43 C

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2012.

Fourth Semester

Chemistry

RESEARCH METHODOLOGY

(For those who joined in July 2008 and afterwards)

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL the questions.

1. Distinguish between paper and communication.
2. What are primary source of literature? Mention a few of these.
3. Indicate the advantages and disadvantages of amperometric titrations.
4. What are auxiliary and combination electrodes?
5. Explain the difference between a cation exchange resin and anion exchange resin.
6. What is R_f value? What are the largest and smallest R_f values possible?
7. What is the use of quench gas in Geiger tubes?

8. What is the principle involved in isotope dilution analysis?
9. Name three types of determinate errors.
10. How many significant figures are present in the following?
 - (a) 4.028
 - (b) 0.028

PART B — ($5 \times 5 = 25$ marks)

Answer ALL the questions choosing either (a) or (b).

11. (a) How would you proceed to choose a problem for research?
Or
(b) Bring out the importance of reviews for a researcher.
12. (a) Give a brief note on the principle and applications of chronopotentiometry.
Or
(b) Discuss the principles and applications of stripping voltammetry.
13. (a) Explain briefly the techniques of column chromatography.
Or
(b) Explain the principles and applications of gas chromatographic method.

14. (a) Discuss the working of Geiger Muller counter used in the detection and measurement of radioactivity.

Or

- (b) What is isotope dilution analysis? Discuss its advantages and disadvantages.

15. (a) Write a basic program for adding two numbers.

Or

- (b) Explain about one dimensional array.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL the questions choosing either (a) or (b).

16. (a) (i) "Patents are not reliable as papers" – Comment on this statement.
(ii) What are the uses of current contents and chemical titles?
- (b) How are secondary sources important in research?
17. (a) (i) Using Ilkovic equation explain how polarographic methods are used for qualitative and quantitative analysis?
(ii) Discuss the principle and working of a polarography.

Or

- (b) With a neat sketch explain the principles involved in cyclic voltammetry. What are the special applications of this technique?