STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2011-12 & thereafter)

SUBJECT CODE: 11CH/MC/AC24

B.Sc. DEGREE EXAMINATION, APRIL 2015
BRANCH IV - CHEMISTRY
SECOND SEMESTER

Reg. No ……..

COURSE : MAJOR CORE
PAPER : ANALYTICAL CHEMISTRY
TIME : 30 MINUTES MAX. MARKS : 30

SECTION – A
TO BE ANSWERED ON THE QUESTION PAPER ITSELF.
ANSWER ALL THE QUESTIONS. (30x1=30)

I. Choose the correct answer:

1. Precision can be expressed by
   a. Standard deviation b. average deviation c. Confidence limit d. all the above.

2. The degree of agreement between a measured value and most probable value is known as
   a. Precision b. accuracy c. error d. standard deviation

3. Solvent extraction is based on the difference in the
   a. Vapour pressure b. solubility c. volatile nature d. solubility between two phases.

4. Boling point of water at 0.5 atm pressure is
   a. 100° C b. >100° C c. <100° C d. 0°C

5. Which is not correct for dropping mercury electrode
   a. Cathode b. indicator electrode c. microelectrode d. anode

6. The type of current involved in amperometric titration is
   a. convection b. migration c. limiting d. diffusion

7. The property studied in DTA is
   a. weight b. change in weight c. change in temperature d. optical rotation

8. In TGA the property measured is
   a. change in heat b. rate of change of weight c. heat evolved d. change in temperature

9. The unit of dipole moment is
   a. cm b. cm^{-1} c. esu d. debye

10. The knowledge of dipole moment is useful for the interpretation of
    a. solubility b. properties of solutions
    c. influence of solvent on the reaction rate d. all the above.

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II. Fill in the blanks:

11. The measured value of the property will never be the _____ of the property.
12. The magnitude of constant is _____ of the size of the sample taken for analysis.
13. Chromatography is a technique based on the compounds affinity for ---------- and a mobile phase.
14. _____ serve as medium in paper chromatography.
15. During electrolysis the concentration of ions around the electrode _____.
16. The reference electrode used in polarography is _____.
17. The reference material in DTA is _____.
18. In thermal analysis, the changes are recorded as a function of _____.
19. Substances for which the magnetic permeability is less than one are called as _____.
20. The value of S for Mn^{2+} ion is _____.

III. State whether true or false:

21. The number of significant figures in 0.06080 is 5.
22. The photo emission cell in photoelectric colorimeter is used as cathode.
23. In polorography KCl is used as supporting electrolyte.
24. In TGA the substance is heated or cooled in a given environment at an uncontrolled rate.
25. The dipole moment values cannot be determined in the solid state.

IV. Answer in a Line or Two:

26. How many data are compared in Q test?

27. Name the law that related intensity of incident light and the intensity of the light transmitted.

28. What is oxygen wave?

29. What is the drawback of amperometric titration?

30. How many types of motion are possible for an electron?

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SECTION B

Answer any five questions: **(5 x 6=30)**

1. What are the characteristics of systematic error?
2. A student obtained the following results for the percentage of manganese in a mineral 30.48, 30.71, 30.07, 30.62. Calculate the mean, median , standard deviation and coefficient of variance.
3. What are the factors on which R_f value depend?
4. Explain Jobs method to determine the composition of complexes.
5. What are the applications of amperometric titration?
6. What are the advantages and disadvantages of DME?
7. Explain TGA of calcium oxalate.

SECTION C

Answer any two questions: **(2 x 20=40)**

8. Explain in detail about the separation of components by Thin layer chromatography. (20)
9. a. write about (i) Ilkovic equation and bring out its significance. (ii) Experimental assembly of Polorography. (10)
   b. Explain thermometric titration with an example. (10)
10. a. Explain the Gouy method to determine magnetic moment. (10)
    b. Discuss about the various applications of magnetic measurement. (10)

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