STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2015–16 & thereafter)

SUBJECT CODE: 15CH/MC/AC14

B.Sc. DEGREE EXAMINATION, NOVEMBER 2016
BRANCH IV- CHEMISTRY
FIRST SEMESTER

REG.NO ……..

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

Section- A
ANSWER ON THE QUESTION PAPER ITSELF
Answer all questions

Choose the correct answer: **(30×1=30)**

1. The number of significant numbers in 1.0097 is
   a) 2 b) 3 c) 4 d) 5

2. Density can be calculated by
   a) mass × volume b) $\frac{\text{volume}}{\text{mass}}$ c) $\frac{\text{mass}}{\text{volume}}$ d) none of the above

3. Among the following which one is sued as a column material
   a) $CaCO_3$ b) SiO_2 c) MgO d) $CaHCO_3$

4. Two liquids can be separated by
   a) crystalisation b) sublimation c) distillation d) freezing

5. Among the following, the complexing agent is
   a) $CaCO_3$ b) $MgCl_2$ c) EDTA d) Eriochrome black-T

6. One normal oxalic acid solution contains how much grams of oxalic acid in 500 ml.
   a) 63 g b) 32.5 g c) 31.5 g d) 6.3 g

7. Thermo gravimetric analysis curve can be influenced by
   a) Pressure b) Temperature c) Volume d) all the above

8. The formula for calcium acetate is
   a) CH_3 COO Ca b) $(CH_3 COO)_2$ Ca c) H COO Ca d) $(H COO)_2$ Ca

9. The unit of dipole moment value is
   a) BM b) ampere c) Kg d) none of the above

10. The material with zero dipole moment is classified as
    a) paramagnetic b) diamagnetic c) ferromagnetic d) ferrimagnetic

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Fill in the blanks:

11. PPM can be expanded as _____.
12. Alloy is a mixture of _____.
13. The adsorbent used in TLC is _____.
14. The pressure maintained in HPLC is _____.
15. In the redox reaction of potassium permanganate and ferrous ammonium sulphate, the tirant is _____.
16. For colored solution _____ miniscus is seen when you fill the burette.
17. The principle followed in gravimetric experiment is _____.
18. DTA curve is a plot between _____ and _____.
19. An example for a diamagnetic material is _____.
20. Magnetic susceptibility can be expressed by _____ equation.

Match the following:

21. Molarity	-	Primary Standard
22. Elution	-	Adsorbent
23. $K_2Cr_2O_7$	-	Concentration
24. NaOH	-	Chromatography
25. Silica	-	Secondary Standard

Answer in one or two sentences:

26. Define normality.

27. What is meant by R_f value?

28. What is meant by incineration?

29. Define Curie-Weiss law.

30. List out any two factors which affect TGA.

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Section B

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

1. Explain the least square method for deriving calibration plots.
2. Write an account of thin layer chromatography.
3. How can you handle solids, liquids and gases in the laboratory? Explain with suitable example.
4. Define solubility product. Write down its application providing a suitable example.
5. Discuss the thermal analysis of silver nitrate.
6. Give the principle, types and application of electrophoresis.
7. How can you differentiate co-precipitation and post precipitation?

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Section C

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

8. a) Define error. Explain the different types of errors. (10)
   b) Calculate the standard deviation for the following data 7.720, 7.725, 7.736, 7.719, 7.742 and 7.701. (5)
   c) Consider the five results 12.53, 12.56, 12.47, 12.67 and 12.48. Apply the Q test and state whether 12.67 is a bad data and has to be rejected. Given Q table = 0.64. (5)

9. a) Give an account of principle and application of column chromatography. (8)
   b) How can you differentiate equivalence point and End point? (3)
   c) How can you determine magnetic moment by Guoy's method? (7)
   d) Calculate the mean and median for the following data 19.5, 19.4, 19.8, 19.6, 20.3, 20.1. (2)

10. a) What are Thermometric titrations? Give an example. (5)
    b) Explain the principle and instrumentation of DTA technique. (10)
    c) Give an account of complexometric titrations. (5)

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