

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

SUBJECT CODE: 15CH/MC/AC14
B.Sc. DEGREE EXAMINATION, NOVEMBER 2015
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)

- The number of parts by weight of the acid containing 1.008 parts by weight of replaceable hydrogen is
a) basicity b) acidity c) normality d) molarity
- Concentration of a solution expressed in moles of solute per liter of solution.
a) mole b) molarity c) molality d) normality
- The number of significant figures in the value 0.00149 is
a) 5 b) 6 c) 3 d) 2
- The common locating agent used to identify amino acids
a) iodine vapour b) permanganate c) hydrogen sulphide d) ninhydrin
- The basis of separation in TLC is
a) adsorption b) isolation c) separation d) chemical exchange
- A mixture of o-nitrophenol and p-nitrophenol can be separated by
a) atm. distillation b) solvent extraction c) sublimation d) steam distillation
- The indicator methyl orange works in the pH range
a) 1-2 b) 4-6 c) 3.5-5 d) 8-10
- Equivalent weight of potassium permanganate in dil H₂SO₄ is
a) $\frac{1}{2}$ its mol-wt b) $\frac{1}{10}$ its mol-wt c) $\frac{1}{6}$ its mol-wt d) $\frac{1}{5}$ its mol-wt
- Indicators used in propitiation titration is
a) absorption indicators b) redox indicators c) metal-ion indicators d) acid-base
- Gravimetric factor for AgCl is
a) 0.59 b) 0.75 c) 0.41 d) 0.20

Fill in the blanks:

11. In gravimetric analysis, conditions of minimum solubility for the precipitate is _____.
12. For an ionic compound to get precipitated from an aqueous solution the ionic product should be _____ then its solubility product.
13. The reference material used in DTA is _____.
14. The device employed to determine the temperature in a DTA apparatus is _____.
15. The TG curve is a plot of _____.
16. In a DTA curve, an exotherm results when the temperature of the sample is _____ than that of the reference.
17. For identification purposes, in chromatography the spots are characterized by their _____ factor.
18. The distribution of a solute between two immiscible solvents is governed by _____.
19. Primary standard used in acid-base reactions are _____.
20. The reaction involved in oxidimetry method is _____.

State whether true or false:

21. A molal solution is one that contains one mole of a solute in one litre of the solvent.
22. All precise values are accurate.
23. The square of the standard deviation is known as absolute deviation.
24. The phase transitions give rise to exotherms in DTA curves.
25. The curve is a plot of $\frac{dw}{dt}$ versus T .

Answer in one or two sentences:

26. Von-Weiman Ratio.

27. Clausius Mossoti equation.

28. Retention factor

29. Q-test & T-test

30. Chromatogram

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Section B

Answer any five questions:

(5×6=30)

1. Define a) Molarity b) Molality c) Normality with examples.
2. How is the deviation from linearity judged quantitatively in a scatter diagram?
3. When is Soxhlet extraction resorted to? Explain with a neat diagram.
4. Discuss briefly about the migration of charged particles under the influence of applied electrical field.
5. What is secondary standard? How does it differ from primary standard?
6. Explain the various ways in which the purity of the substance is determined.
7. How is dipole moment expressed? Explain the vector nature of dipoles and its significance.

Section C

Answer any two questions:

(2×20=40)

8. a) How are the samples prepared and handled in a laboratory?
b) Define the term standard deviation. A student reported the following percentages for C in repeat analysis of a sample? What is the standard deviation of these data?
%C 20.36, 20.26, 20.18, 19.98, 19.86 and 19.72
c) What are systematic and random errors. [5+7+8]
9. a) Explain the principle behind solvent extraction.
b) Describe the technique of HPLC with a neat diagram.
c) 20ml of a solution of NaOH required for complete neutralization is 22ml of a deci-normal solution of HCl. Calculate the normality and the amount of NaOH present in 400ml of a solution. [5+10+5]
10. Briefly discuss the following
a) Determination of dipole moment by temperature method
b) Magnetic moment determination by VSM method
c) TGA of silver nitrate. [7+7+6]
