

E 9704

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Reg. No.....

Name.....

**B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2014**

**First Semester**

Core Course—**METHODOLOGY OF CHEMISTRY AS A DISCIPLINE OF SCIENCE**

(Common for B.Sc. Chemistry Model I and Model II, B.Sc. Petrochemicals and B.Sc. Chemistry Environment and Water Management)

[2013 Admission onwards]

Time : Three Hours

Maximum : 60 Marks

**Part A**

*Answer all questions.  
Each question carries 1 mark.*

1. \_\_\_\_\_ is a redox Indicator.
2. Symbol in Chemistry is defined as the short scientific \_\_\_\_\_.
3. Mole is defined as \_\_\_\_\_.
4. In Gravimetric analysis of Barium ; Barium in the solution is converted into \_\_\_\_\_.
5. Expansion of EDTA is \_\_\_\_\_.
6. In Thomson's model of atom, he considered atom as \_\_\_\_\_.
7. One addition Polymer is \_\_\_\_\_.
8. \_\_\_\_\_ is an example for secondary standard substance.

(8 × 1 = 8)

**Part B**

*Answer any six questions.  
Each carries 2 marks.*

9. Explain the terms mean deviation and standard deviation.
10. What is Hypothesis ? How does it differ from law ?
11. Explain the terms :
  - (a) Quantitative dilution ;
  - (b) Standard solution.
12. Differentiate between absolute error and relative error.
13. Explain Rutherford's model atom and discuss its drawbacks.
14. Explain the terms Regression coefficient.

**Turn over**



15. Explain the term Precision. What are the ways of expressing precision ?
16. Explain the term solubility product ? In cation analysis fourth Group Metal ions and IInd Group Metal ions are precipitated as their sulphides ? But with the second Group reagent (dil HCl and  $H_2S$ ) ; IVth Group metal ions are not precipitated give reason ?
17. Distinguish between Inductive and Deductive reasoning.
18. Explain the terms :
- Science ;
  - Scientific statements.

(6 × 2 = 12)

### Part C

Answer any **four** questions.  
Each carries 4 marks.

19. Discuss the principles and method of EDTA Titration by taking one example.
20. Write a note on Alchemy.
21. What are pH Indicators ? Give two examples and mention their applications.
22. How are errors classified ? Discuss briefly on different methods used for minimizing errors.
23. Write on permanganometric Titration explain the principles involved ? Give the equation involved.
24. Discuss briefly on the role of models in Science.

(4 × 4 = 16)

### Part D

Answer any **two** questions.  
Each question carries 12 marks.

25. Explain the following :—
- Fractional Distillation ;
  - Solvent Extraction ;
  - Crystallization.
  - Condensation and Addition reactions.
26. Write brief account of various steps involved in science Research.
27. (a) Explain the principles and steps involved in the Gravimetric estimation of Iron.  
(b) Explain significant digits.
28. (a) Discuss the role of chemical science in the service of man.  
(b) Explain Nano technology and write shortly on the applications of Nano Science.

(2 × 12 = 24)