

Third Year B.Sc., Degree Examinations**August / September 2015***(Directorate of Distance Education)***CHEMISTRY****PAPER: DSC 260: CHEMISTRY – III**

Time: 3hrs.]

[Max. Marks: 75/85

Instructions to the candidates:

- i) *This paper consists of FIVE sections. Answer all sections.*
- ii) *Write equations and neat diagrams where ever necessary.*
- iii) *Section – E is compulsory for 85 marks scheme only.*
- iv) *Section – A contains one mark questions and should be answered in first two pages of main answer book. The questions of Section – A answered in any other part will not be valued.*

SECTION – A**I. Answer in a word, a phrase or a sentence:**

10 x 1 = 10 Marks

1. Mention the chief ore of Manganese.
2. What are Abrasives?
3. Define Carnot theorem.
4. Name the Alloy used in High Speed cutting tools.
5. Define transport number.
6. What are diastereomers?
7. What are waxes?
8. Write the Molecular formula of cocaine.
9. Define conductance.
10. Define over voltage.

SECTION – B**II. Answer any FIVE questions:**

5 x 3 = 15 Marks

11. Give the composition of bees wax and sugarcane wax.
12. How do you show that citral contains two double bonds?

Contd..... 2

13. Explain Isoprene Rule.
14. Describe the conversion of Aldohexose to aldopentose.
15. Explain Electrophoretic effect.
16. Derive Nernst equation for EMF of a cell.
17. Write a note on Quaternation process.

SECTION – C

III. Answer any FIVE of the following questions: 5 x 6 = 30 Marks

18. Deduce Clausius – Clapeyron equation and write its application. (6)
19. a) Describe construction and working of Weston cadmium cell.
 b) Define: i) equivalent conductance ii) Specific conductance. (4 + 2)
20. Discuss the Strecker and Gabriel synthesis of Amino acid. Give an examples. (6)
21. a) What are terpenes? How are they classified? Explain with examples.
 b) Write IUPAC name of Isoprene and Geranic acid. (3 + 3)
22. a) Explain the Biological significance of Vitamin – C.
 b) Write the structure of Vitamin – A. (4 + 2)
23. a) How is Nickel recovered from bessamirised matte by Mond’s process?
 b) Boric acid is used in Nickel electroplating. Why? (4 + 2)
24. a) How is pH of a solution determined by glass electrode method?
 b) What are fuel cells? And give its importance. (4 + 2)

SECTION – D

IV. Answer any TWO of the following questions: 2 x 10 = 20 Marks

25. a) Derive Helmholtz – Gibb’s free energy equation.
 b) Explain the physical significance of entropy.
 c) Explain i) Spontaneous process
 ii) Efficiency of a heat engine (4 + 2 + 4)
26. a) How is silicon carbide manufactured?
 b) What are Refractories? How are they classified?
 c) Explain Electroplating of Gold. (4 + 3 + 3)

27. a) Explain the synthesis of Ascarbic acid from D – Glucose.
b) Explain Gabriel synthesis.
c) Explain the ring or cyclic structure of D – fructose. (4 + 2 + 4)

SECTION – E

V. *Answer any ONE of the following questions:* 1 x 10 = 10 Marks
(Compulsory question for 85 marks scheme only)

28. a) Give the advantages and disadvantages of synthetic detergents with respect to soaps.
b) Give the synthesis of citral. (5 + 5)
29. a) Explain Debye Huckel theory of strong electrolyte.
b) What are reversible and irreversible cell. (5 + 5)

* * * * *