Third Year B.Sc., Degree Examinations,
December 2017
(Directorate of Distance Education)
CHEMISTRY
Paper: DSC – 260: CHEMISTRY – III

Time: 3 hrs] [*Max. Marks: 75/85*

Instruction to the Candidates:
1. *This question paper consists of FIVE sections. Answer all the sections.*
2. *Write equations and neat diagrams whereever necessary.*
3. *Section – E is compulsory question for 85 marks scheme only*
4. *Section – A contains one mark questions and should be answered in first two pages of the main answer book. The questions Section – A answered in any other part will not be valued.*

SECTION – A

I. *Answer the following in a word, a phrase or a sentence:* 10 x 1 = 10 Marks

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

SECTION – B

II. *Answer any FIVE of the following questions:* 5 x 3 = 15 Marks

    11. Explain Isoprene rule.

    12. Derive Nernst equation for EMF of a cell.

    13. How do you show that citral contains two double bonds?

    14. Describe the conversion of Aldohexose to Aldopentose.

    15. Write a note on Quartation process.

    16. Give the composition of bee's wax and sugar cane wax.

    17. What is Liquid Junction potential? How it is minimized?

SECTION – C

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

18. a) How is pH of a solution determined by using glass electrode?

b) What are fuel cells and give its importance? (4 + 2)

19. Discuss the Strecker and Gabriel synthesis of amino acid. (3 + 3)

20. a) Describe the construction and working of Weston–Cadmium cell.

b) Define (i) equivalent conductance   ii) specific conductance. (4 + 2)

21. a) How is Nickel recovered from bessemerised matte by Mond's process?

b) What are Ellingham's diagrams? (4 + 2)

22. a) What are terpenes? How are they Classified? Explain with examples.

b) Give the IUPAC names of Isoprene and Geranic acid. (4 + 2)

23. Deduce Clausius – Clapeyron equation and write its application. (6)

24. a) Explain the Biological significance of Vitamin – C.

b) Write the structure of Vitamin – A (4 + 2)

SECTION – D

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

25. a) Describe the manufacture of Silicon Carbide.
b) What are Refractories? How they are classified?
c) Explain the electroplating of Gold. (4 + 3 + 3)

26. a) Derive Gibb's – Helmholtz equation.
b) Explain the physical significance of entropy.
c) Explain: (i) Spontaneous process   (ii) Efficiency of a heat engine. (4 + 2 + 4)

27. a) Explain the synthesis of Ascorbic acid from D – Glucose.
b) What is i) iso electronic point ii) Zwitter ion.
c) Explain the ring or cyclic structure elucidation 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) Write the various postulates of Debye – Huckel theory of strong electrolytes.

b) What are reversible and irreversible cell? (5 + 5)

29. a) Give the advantage and disadvantage of synthetic detergents with respect to soaps.

b) Give the Synthesis of citral. (5 + 5)

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