DSA – 260 Page No. 1

First Year B.Sc., [Distance Education] Degree Examination

Aug / Sept 2011
Chemistry
Paper – I

Time : 3 hrs Max. Marks : 75/85

1. This paper consists of **FIVE** sections. Answer all sections.
2. 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 of answer book will not be valued.
3. Write equations and neat diagrams wherever necessary.
4. Section – 'E' is compulsory for 85 marks scheme.

SECTION – A

Answer all the following questions in a word, a phrase or in a sentence. 10 x 1 = 10

1. State Pauli's exclusion principle?
2. What is semi permeable membrane?
3. What are alkenes?
4. Define Electro negativity?
5. What is critical solution temperature?
6. Write the IUPAC name of the compound $CH_3 - \underset{\underset{C_3H_7}{|}}{CH} - CH_2 - \underset{\underset{CH_3}{|}}{CH} - C_2H_5$
7. What is a functional group?
8. Define electrophoresis?
9. What are fuels?
10. Give the composition of cement?

SECTION – B

Answer any FIVE of the following: 5 x 3 = 15

11. How is Nitrogen detected by Lassaignis test?
12. What are the characteristics of a good fuel?
13. State Raoutts law? 0.005Kg of non – volatile, non – electrolyte solute dissolved in 0.1 kg of water raised the boiling point by 0.49 K. Calculate the molar mass of the salute (Given K_b 0.52 $K K_g^{-1}$ md^{-1})
14. Explain the mechanism of SN_1 reaction?
15. Define Aufbau Principle? Give the quantum numbers of third electron of lithium?

Contd....2

16. What is inversion temperature? Explain the liquefaction of gases?

17. Explain the preparation and any two properties of atomic hydrogen?

SECTION - C

Answer any FIVE of the following:　　　　　　　　　　5 x 6 - 30

18. a) Define Ionisation energy? Explain the factors influencing ionisation energy?

　　b) Explain desilverisation of lead.　　　　　　　　　3 + 3

19. a) How is halogen in an organic compound estimated by carius method?

　　b) What are paints? Mention its constituents.　　　　4 + 2

20. a) Derive the relation between relative lowering of vapour pressure and molar mass.

　　b) How alkynes are prepared by dehydrohalogenation of alkyl halides?　4 + 2

21. a) Describe the manufacture of glass with a neat labelled diagram.

　　b) State Henry's law and mention its limitations.　　4 + 2

22. a) What are quantum numbers? Give their significance.

　　b) How are cycloalkanes synthesized by Dickmann's method?　4 + 2

23. a) What is degree of freedom? Calculate the vibrational degree of freedom of diatomic molecule. https://www.kuvempuonline.com

　　b) Explain why sigma bond is stronger than Pi bond?　4 + 2

24. a) Give the experimental determination of critical temperature and critical pressure of a gas.

　　b) Explain, Why does lithium show anomalous behavior?　4 + 2

SECTION - D

Answer any TWO of the following:　　　　　　　　　2 x 10 - 20

25. a) Write the mechanism of chlorination of methane.

　　b) Describe the experimental procedure to determine molar mass of non volatile solute by Beckmann's method.

　　c) Explain with reference to alkali metals (i) Electro +ve character

　　　　　　　　　　　　　　　(ii) Flame Colouration　　3 + 4 + 3

26. a) What are partially miscible liquids? Discuss the effect of temperature on Nicotine and water system.

    b) Explain SP hybridization taking ethyne as example.

    c) What are Carbocations? Explain the stability of carbocation.   4 + 3 + 3

27. a) Derive relation for Langmuir adsorption isotherm.

    b) Explain the mechanism of addition of HBr to propene in presence of peroxide.

    c) Give the periodic classification of elements.   4 + 3 + 3

28. a) Explain molecular orbital structure of Benzene.

    b) How is water gas manufactured?

    c) An organic compound contains C = 12.76% H = 2.13% and Br = 85.11%. Its vapour density = 94. Find its molecular formula.   4 + 3 + 3

SECTION – E

Answer any ONE of the following: $1 \times 10 = 10$

29. a) Explain the principle of fractional distillation with neat diagram.

    b) Explain the mechanism of nitration of benzene.   5 + 5

30. a) Explain how osmotic pressure of a solution is determined by Berkeley and Hartley's method.

    b) Explain the stability of cycloalkanes by Bayer's strain thoery.   5 + 5

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