

B.N. Bandodkar College of Science, Thane
Second Semester End examination, March 2015
Additional Examination (paper II)
USCH202

Duration: 2 hrs and 30min.

Total Marks:75

N. B. :

1. All the questions are compulsory
2. Figures to the right indicates full marks
3. Use of log table/ non programmable calculator is allowed

- Q.1
- a What are the different methods of expressing concentration of a solution? 4
- OR**
- a Write a short note on primary and secondary standard substances with suitable examples. 4
- b Discuss the basic parts of the computer. 4
- OR**
- b Define and explain the term formality with suitable examples. 4
- c What is the molality of a solution of 10 g NaOH in 500 g water? (MW of NaOH = 40). 4
- OR**
- c What is meant of electromagnetic radiations? Describe various regions of the electromagnetic spectrum. 4
- d Define the term Normality. How will you determine the equivalent weight for acids, bases, oxidizing and reducing agents? 4
- OR**
- d 20 gram of glucose ($C_6H_{12}O_6$) is dissolved in 150 gram of water. Calculate the mole fraction of glucose in solution. (At. wt. C = 12, H= 1, O = 16). 4
- e Write a short note on molecular spectroscopy. Explain vibrational-rotational spectra (IR spectra). 4
- OR**
- e What is the wave number of lines of frequency of 4×10^{14} Hertz? ($c = 3 \times 10^8$ m/s) 4
- Q.2
- a Write a short note on biological essential elements. 4
- OR**
- a Give the role of metal ion in biological system. 4
- b Explain nonessential elements in detail. 4
- OR**
- b Write a short note on oxygen transport. 4
- c Explain green house effect. 4
- OR**
- c Discuss role of sodium and potassium in biological system. 4
- d Explain ozone layer depletion effects. 4
- OR**
- d Explain inert pair effect in detail. 4
- e Discuss methods employed to overcome the ozone depletion problem. 4
- OR**
- e Write a short note on allotropes of carbon. 4
- Q.3
- a Give the general characteristics of aromatic compounds? 4
- OR**
- a Write short note on Resonance energy. 4

- b Which of the followings are aromatic, antiaromatic or non aromatic? Why? 4
 (i) Cyclopentadiene (ii) Cyclobutadiene (iii) Tropium Cation (iv) cyclobutane
OR
- b Explain the concept of antiaromaticity with examples. 4
 c What is action of aqueous KOH and alcoholic KOH on (i) Ethyl bromide 4
 (ii) Cyclohexyl chloride (iii) isopropyl bromide (iv) n-propyl bromide
OR
- c Explain the following reactions giving two examples of each. 4
 (i) Hofmann elimination (ii) Haloform reaction.
 d What is action of ethyl magnesium bromide on (i) Methanal (ii) Acetone. 4
OR
- d Explain the following terms giving examples (i) Alkaline hydrolysis of alkyl halide. 4
 (ii) Ammonolysis of alkyl halide.
 e Explain the followings (i) Williamsons synthesis (ii) Clemensens reduction. 4
OR
- Q. 4 e Explain the following terms giving examples (i) Esterification (ii) Dehydration. 4
 a What are the advantages of interfacing computers with instruments? 3
OR
- a Explain the term mole fraction with suitable examples. 3
 b Give the health hazards of carbon monoxide. 3
OR
- b Name the disease caused by deficiency of iron. 3
 c How will you convert (i) Methanal to Lactic acid 3
 (ii) Ethyl chloride to propionic acid.
OR
- c How will you convert (i) Ethene to propene (ii) Cyclohexanol to cyclohexyl amine. 3
 d Define the terms (i) Titrant (ii) Titrand. 2
OR
- d Define the terms (i) Spectroscopy (ii) Absorption. 2
 e Give any two biological function of copper. 2
OR
- e Draw the structure of diamond. 2
 f Explain Huckels Rule of Aromaticity. 2
OR
- f Write short note on Non benzenoid aromatic compounds. 2