

B.N. Bandodkar College of Science, Thane  
Second Semester End Examination, ~~March 2015~~ Additional/ATKT/JUN-15.  
Additional Examination (paper II) (old course)  
USCH201

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 Write a short note on molecular spectroscopy. Explain vibrational-rotational spectra (IR spectra). 4
- OR
- a 49.8 grams of KI is dissolved in 1 kg of solvent. What is the molality? (At wt. K = 39.1, I = 126.9). 4
- b What is meant by dual nature (particle and wave) of light? 4
- OR
- b What are the different methods of expressing concentration of a solution? 4
- c Discuss the term formality (F) with suitable examples. 4
- OR
- c Write a short note on primary and secondary standard substances with suitable examples. 4
- d What are the applications of computers in the field of chemistry? 4
- OR
- d Calculate the frequency of radiations expressed in wave number whose wavelength is 500 nm. 4
- e Discuss the characteristics of electromagnetic radiations? 4
- OR
- e Define the term Normality. How will you determine the equivalent weight for acids, bases, oxidizing and reducing agents? 4
- Q.2 a Discuss role of sodium and potassium in biological system. 4
- OR
- a Give the role of iron in biological system 4
- b Write a short note on non essential elements. 4
- OR
- b Discuss ozone layer depletion in detail. 4
- c Write a short note on green house effect. 4
- OR
- c Explain carbon allotropes in details. 4
- d What is silicones? How they are prepared? 4
- OR
- d How to overcome ozone layer depletion. 4
- e Explain inert pair effect in details. 4
- OR
- e Give the consequences for enhancement in green house effect. 4
- Q.3 a Which of the followings are aromatic, antiaromatic or non aromatic? Why? 4  
(i) Cyclopentadiene (ii) Cyclobutene (iii) Tropium Cation (iv) cyclopropane.

OR

- a Explain the following terms giving examples (i) Saponification (ii) Dehydration 4  
b What is action of ethyl magnesium bromide on (i) Acetone (ii) Acetaldehyde. 4

OR

- b Explain the followings (i) Williamson's synthesis (ii) Clemmensen's reduction. 4  
c Explain the following terms giving examples, 4  
(i) Alkaline hydrolysis of alkyl halide. (ii) Ammonolysis of alkyl halide.

OR

- c Explain the following reactions giving two examples of each. 4  
(i) Hofmann elimination (ii) Haloform reaction.  
d Give the general characteristics of aromatic compounds? 4

OR

- d Write short note on Resonance energy. 4  
e Explain the concept of antiaromaticity with examples. 4

OR

- e What is action of aqueous KOH and alcoholic KOH on (i) Ethyl bromide 4  
(ii) Cyclohexyl chloride (iii) isopropyl bromide (iv) n-propyl bromide

- Q. 4 a Explain the terms (i) Molarity (ii) Parts per billion (iii) Parts per million 3

OR

- a Define the terms (i) Wavelength (ii) Frequency (iii) Wavenumber. 3  
b Give any two functions of Copper in Biological System. 3

OR

- b What is Catenation? Explain with suitable example. 3  
c Explain Huckel's Rule of Aromaticity with examples. 3

OR

- c Write short note on Non benzenoid Aromatic compounds. 3  
d Define the phenomenon of emission. 2

OR

- d Define the term molality with suitable example. 2  
e Draw the structure of Graphite. 2

OR

- e Give two examples of Sulphur Oxides. 2  
f How will you convert (i) Methanal to Lactic acid 2  
(ii) Ethyl chloride to propionic acid.

OR

- f How will you convert (i) Ethene to propene. (ii) Cyclohexanol to cyclohexyl amine. 2

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