Karanjia Auto College ,Karanjia,Mayurbhanj

CC-11, CHEMISTRY HONS.

1. Answer all the questions [1×8=8]

i. What is the range of wavelength absorption for UV- spectra. ii. What is bathochromic shift.

iii. Define the term ‘chromophore’. iv. In U.V spectra which transition gives most intense spectra. v. At which -OH group shows IR absorption.

vi. What is reducing sugar. vii. What is inversion of sugar. viii. Give an example of biodegradable polymer. ix. What is edible dye.

x. Define the term polydispersity index.

2. Answer any **Eight** the questions [1.5×8=12]

i. Give an example of liquid crystal polymer.

Ii. What is monomeric unit of starch. iii. What are epimers. iv. What is base peak in mass spectroscopy. v. What are nonfundamental vibrations.

vi. Which range in IR spectra is known as finger print region. vii. Define the term chemical shift.

viii. Give an example of thermosetting polymer. ix. Define hyper chromic shift in UV -spectra.

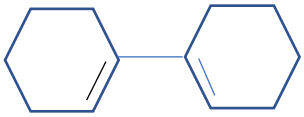
x. With increase in electronegativity of substituent atom what will happen to chemical shift of the proton attached to substituent carbon atom.

xi. What is auxochromes. xii. Congo red belongs which category of dye.

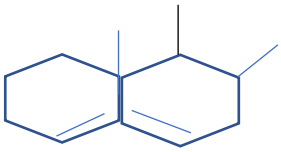
3. Answer any **Eight** the questions [2×8=16]

i. Discuss the absorption pattern of UV-spectra in a conjugated diene. ii.

Calculate λ_{max} of following compound using Woodward-Fisher rule:



iii. Calculate λ_{max} of following compound using Woodward-Fisher rule:



iv. Discuss about n-π* transition in UV spectroscopy.

v. Explain effect of H-bonding on IR absorption of a compound.

vi. How UV spectra is useful for distinction between cis and trans isomer of a compound.

vii. Discuss the anisotropic effect of benzene. viii. What is metastable peak. Give an example of it.

ix. What are anomers. Give an example. x. Write structure of Malachite green. xi. Write Killiani-Fischer synthesis. xii. Convert glucose in to mannose. xiii. What is vulcanization rubber. Give an example. xiv. What are amphiphilic polymers. Give an example of it. xv. Write fragmentation pattern of ethane.

4. Answer any **Four** questions [4×6=24]

i. (a) Write a short note on chromophore.

(b) What will be effect of protic solvent on absorption band of UV-spectroscopy Ii.

(a) Discuss in detail about finger print region and its application.

(b) What is effect of ring size on IR absorption. iii. (a) What is spin-spin coupling. Explain spin-spin coupling taking ethylene as example.

(b) Write down the factors affecting chemical shift of a molecule. iv. (a) An organic compound with molecular mass 69 is transparent above 200 nm. The absorption bands in infrared spectrum are (i) 2941 cm^{-1}, (ii) 2273 cm^{-1}, (iii) 1460 cm^{-1}. In NMR, two signals are formed. One is septet at 7.28 τ(J= 6.7 cps) and another is doublet at 8.67 τ (J= 6.7 cps).

(b) Discuss the fragmentation pattern of n-butane.

v. Elucidate the structure of maltose in brief with required chemical reaction.

vi. Elucidate the structure of Alizarin and write the method of synthesis of the same.

vii. Write mechanism of cationic, anionic and free radical polymerization.

viii. Write short notes on

(a) Fabrics (b) Conducting polymer.