

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

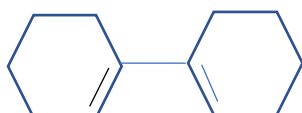
[1.5×8=12]

- 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 non-fundamental 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.

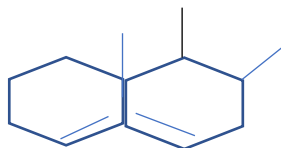
3. Answer any **Eight** the questions

[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 $n-\pi^*$ 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 7.28τ ($J=6.7\text{ cps}$) and another is doublet at 8.67τ ($J=6.7\text{ cps}$).
- (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.