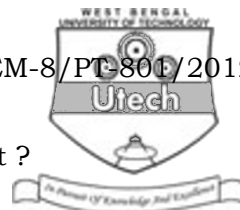




- iii) By which of the following method Riboflavin can be assayed ?
- a) UV spectroscopy b) IR spectroscopy
- c) Fluorimetry d) Visible spectroscopy.
- iv) Glower's lamp is used as a source of radiation in
- a) IR Spectrophotometer b) UV spectroscopy
- c) Fluorimetry d) Visible spectroscopy.
- v) Stretching vibration involves
- a) movement along the axis of the molecule
- b) change in bond angle
- c) movement along the axis of the bond axis
- d) resonance.
- vi) Beer's law states that intensity of a monochromatic light decreases exponentially with the
- a) decrease in concentration
- b) increase in concentration
- c) decrease in path length
- d) increase in path length.



- vii) Which factors influence chemical shift ?
- a) Inductive effect b) Anisotropic effect
c) Hydrogen bonding d) All of these.
- viii) Why is the oxygen-hydrogen absorption of CH_3OH such a broad band in the infrared ?
- a) Rotational energy levels broaden the absorption
b) Hyperconjugation resonance broadens the absorption
c) Resonance broadens the absorption
d) Hydrogen bonding broadens the absorption.
- ix) Which region is called the finger print region ?
- a) $4000 - 2500 \text{ cm}^{-1}$ b) $2500 - 1400 \text{ cm}^{-1}$
c) $1400 - 600 \text{ cm}^{-1}$ d) $600 - 200 \text{ cm}^{-1}$.
- x) Ion separator is a component of Spectrometer ?
- a) UV-visible Spectrometer
b) Mass Spectrometer
c) IR Spectrometer
d) NMR Spectrometer.
- xi) Chemical shift in NMR Spectroscopy is expressed in
- a) cm^{-1} b) cm
c) nm d) ppm.

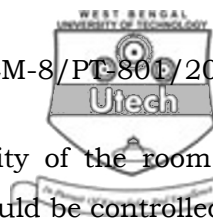


GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. i) Give the wavelength ranges of UV, visible and infrared regions.
- ii) What is chromophore ?
- iii) Which type of organic compounds show $\sigma \rightarrow \sigma^*$ transitions ? $2 + 1 + 2$
3. i) How will you characterize $n. \rightarrow \Pi^*$ transitions ?
- ii) Why is carotene a coloured compound ?
- iii) Which factors are responsible for the deviation from Beer's law ? $2 + 1\frac{1}{2} + 1\frac{1}{2}$
4. i) What is molar absorption coefficient ?
- ii) What is triplet state ?
- iii) What are the differences between fluorescence and phosphorescence ? $1\frac{1}{2} + 1\frac{1}{2} + 2$
5. i) What are the basic parts of a Visible Spectrophotometer ?



ii) Why is the temperature and humidity of the room in which IR Spectrophotometer kept should be controlled ?

iii) What is stretching vibration ? $1\frac{1}{2} + 1\frac{1}{2} + 2$

6. Write short notes on TQM.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. i) What is the advantage of gratings over prism monochromator ?

ii) What is the principle of Fourier Transform system ?

iii) What is Fermi resonance ?

iv) Define the terms 'chromophore' and 'auxochrome' with examples.

v) What are the applications of UV Spectrophotometry ?

$2 + 3 + 3 + 4 + 3$

8. i) Explain the following terms :

a) Spin-Spin Splitting

b) Chemical Shift

c) Shielding mechanism.

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ii) What are the advantages of TMS as a reference compound to be used in NMR Spectroscopy ?

iii) Name two organic compounds which can be used as solvents in NMR Spectroscopy. $(4 \times 3) + 1 + 2$

9. i) What are hyperchromic and hypsochromic shift ?

ii) Define wave number.

iii) Which factors affect the vibrational frequency ?

iv) Discuss the basic principle of mass spectroscopy.

$$2 \frac{1}{2} + 2 \frac{1}{2} + 1 + 5 + 4$$

10. i) What is validation ?

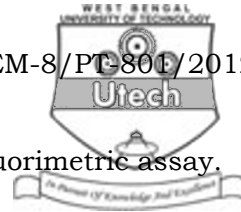
ii) Discuss different types of validation.

iii) Give the requirements to be fulfilled for the compliance of GLP as per the stipulations provided by the regulatory authority.

iv) What is ISO 9000 ? $1 + 3 + 8 + 3$

8001

6



11. i) Give the basic principle behind the fluorimetric assay.
- ii) What is the significance of Fingerprint region in IR Spectroscopy ?
- iii) What are the limitations of flame photometer ?
- iv) How will you estimate riboflavin using photofluorimeter ?

3 + 4 + 4 + 4
