



- iii) Bathochromic shift depends on
- isolated double bond
 - conjugated double bond
 - thermal conductivity
 - absorption of light.
- iv) Gyromagnetic ratio is expressed as
- $2\pi/hl$
 - $2\pi h/\mu l$
 - $2\pi\mu/hl$
 - $2\pi/\mu hl$.
- v) Interference filters are applicable for the analysis in
- UV-visible spectroscopy
 - Mass spectrophotometer
 - Flame photometer
 - all of these.
- vi) Which of the vibrational changes occurs at lower frequency level in IR spectroscopy ?
- Bending vibration
 - Stretching vibration
 - Bending or stretching depending on the media.
- vii) finger-print region is characteristic of the organic compounds.
- $3000-1400\text{ cm}^{-1}$
 - $1400-666\text{ cm}^{-1}$
 - $2100-1600\text{ cm}^{-1}$
 - $2800-1400\text{ cm}^{-1}$.
- viii) In mass spectra the most intense peak is the
- base peak
 - rearrangement peak
 - fragmention peak
 - none of these.



- ix) Xenon arc lamp is the source of light in
- a) Spectrofluorometer b) IR spectrophotometer
c) Flame photometer d) all of these.
- x) Number of NMR signals signifies
- a) Electronic environment of each kind of proton
b) Different kinds of proton
c) Environment of proton with respect to other nearby proton
d) none of these.
- xi) The unit of chemical shift is
- a) nanometer b) fresnel
c) ppm d) Hz.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What is the principle of EIMS (Electron Impact Mass Spectrometer) ?
3. Write in detail about Photo Multiplier Detector.
4. What are the differences between the Traditional IR and FTIR ?
5. Write a note on cathode lamp.
6. Write the principle of Flame ionization spectroscopy.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.

3 × 15 = 45

7. Write a short note on the principle of Fluorometry. What are the advantages of Fluorometry over UV-visible spectroscopy ? Write a note on the applications of Fluorometry. 7 + 3 + 5
8. Write a note on the instrumentations of IR spectroscopy.
9. Derive Beer-Lambert's law. Write a note on deviation from Beer-Lambert's law. Explain the function of various filters and grating monochromator in UV-spectroscopy. 5 + 3 + 7
10. a) The number of NMR signals tells us what ? 1
b) The position of NMR signals tells us what ? 1
c) The intensity of NMR signals tells us what ? 1
d) The splitting of NMR signals into several peaks tells us what ? 1
e) Write a short note on shift. $3\frac{1}{2}$
f) Derive Beer-Lambert's law. 5
g) How to distinguish between Hydroxyl group and amino group through IR spectroscopy ? $2\frac{1}{2}$

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