

## QUESTION BANK OF PHARMACEUTICAL ANALYSISIII [BOP- 475]

### UNIT I

#### Short answer question.

- 1 The range of wavelength of U.V. visible spectrometer.
- 2 Define lambda max.
- 3 Law governs absorption in U.V. spectroscopy.
- 4 Detector used in U.V. spectrometer
- 5 Light source used in U.V. and visible spectroscopy.
- 6 Define auxochrome and chromophore with example.
- 7 Bathochromic shift and hypsochromic shift.
- 8 Which material Sample cell is made up of?
- 9 The value of lambda max for homoannular and hetroannular ring according to woodward-fieser rule.
- 10 Define beer -lambert law and give formula of beer lambert law.
- 11 .write the name of different transition used in U.V. spectrometer.
- 12 Give the example of  $\pi$ - $\pi^*$  transition and n- $\pi$  transition.
- 13 Which transition has lowest energy in U.V. spectrometer?
- 14 Write the name of filter used in visible spectrometer.
- 15 Range of mid I.R.spectroscopy in (wave number  $\text{cm}^{-1}$ )
- 16 Infrared spectroscopy provides valuable information about.
- 17 A strong signal at  $1700 \text{ cm}^{-1}$  in an IR spectrum indicates the presence of group.
- 18 A strong signal at  $3400 \text{ cm}^{-1}$  in an IR spectrum indicates the presence of group
- 19 Define scissoring. Rocking, wagging, and twisting.
- 20 Effect of hydrogen hydrogen bonding in I.R. absorption.
- 21 Define Fermi resonance, coupled vibration. Asymmetrical stretching.
- 22 What is finger print region and functional group region?
- 23 How aldehyde and ketone Stretching differentiated from I.R.
- 24 Solvent used in I.R. Spectroscopy.
- 25 Detector used in I.R. Spectroscopy.
- 26 Which material Sample cell is made up in I.R. Spectroscopy.
- 27 Sample handling technique used in I.R. Spectroscopy.
- 28 Light source used in I.R. Spectroscopy.

#### Long answer question.

- 1 Discuss the type of electronic transition in U.V. spectroscopy.
- 2- Derived beer lamberts law.
- 3- Define auxochrome and chromophore, bathochromic shift, hypsochromic shift.
- 4- Theory and principle of U.V. spectroscopy.

- 5- Instrumentation in U.V. spectroscopy.
- 6- Draw labelled diagram double beam U.V. spectrophotometer.
- 7- Describe the sample handling in I.R. spectroscopy.
- 8- Instrumentation in I.R. spectroscopy
- 9- Discuss Theory and principle of I.R. spectroscopy.
- 10- Discuss F.T.I.R. and application of infra red spectroscopy.

## **UNIT II**

### **Short answer question**

- 1- Define chemical shift. and unit of chemical shift.
- 2- What is shielding and deshielding.
- 3- The value of chemical shift is lies in between.
- 4- Write the name of internal standard used in NMR spectroscopy.
- 5- What is  $\alpha$  spin state  $\beta$  spin state?
- 6- Define spin-spin coupling and spin-spin splitting.
- 7- Effect of electronegative atom in chemical shift.
- 8- Solvent used in N.M.R. Spectroscopy.
- 9- N.M.R and C-13 spectroscopy provides valuable information about.
- 10- Which nuclei show NMR spectroscopy?
- 11- What is precessional frequency?

### **Long answer question**

- 1- Discuss the theory and pharmaceutical application of  $^1\text{H}$ -NMR spectroscopy.
- 2- EXPLAIN the process of chemical shift with example. What is shielding and deshielding.
- 3- Write a note on C-13 spectroscopy. And role of solvent in NMR.
- 4- Discuss the Parameter of NMR Spectra.
- 5- Instrumentation in N.M.R. spectroscopy.
- 6- Write a note on spin-spin coupling with suitable example. Give the nature, type and no. of peaks in NMR Spectra of ETHANOL and benzaldehyde.
- 7- Discuss the reason behind taking a TMS as reference compound.

### UNIT III

#### Short answer question

- 1 What is base peak?
- 2- What is parent peak?
- 3- What is (M+1) and (M+2) peak.
- 4-What is the different type of peak obtained in mass spectrometer.
- 5- How is mass and radius of ion path related?
- 6- What is the different type of ionization technique in mass spectrometer?

#### Long answer question

- 1- Discuss the various molecular fragmentation patterns of molecules with mass spectrometer.
- 2- What is principle behind mass spectrometry?
- 3- Discuss the instrumentation and application of Mass spectroscopy
- 4- Give the following answer in short :
  - (i) Mc-Lafferty rearrangement
  - (ii) Molecular ion peak
  - (iii) Fragmentation pattern of ethanol and bezaldehyde.
  - (iv) Formation of tropylium ion in mass.

### UNIT IV

#### Short answer question

- 1-What is singlet state, doublet and triplet state.
- 2-Difference between fluorescence and phosphorescence.
- 3-What is the use of primary and secondary filter.
- 4 What is quenching.
- 5- Which is the source of light in flourimeter?
- 6- What is self quenching? Give example.
- 7- Which is the source of light used in atomic absorption spectroscopy..
- 8- Flame photometer based on the principle of absorption/emission.
- 9- Which burner used in flame photometer.
- 10- Difference between atomic absorption spectroscopy and atomic emission spectroscopy.
- 11- Which combination used for obtained maximum temperature in flame.
- 12- Which of electron microscope which is used to study internal structure of cells is? (TEM)**
- 13- Electrons of Scanning Electron Microscope are reflected through.(metal plate)
- 14- Object can be magnified under electron microscope about.(300000 times)

15- Scanning electron microscopy (SEM) is best used to study (**Surface Morphology**)

16- The technique used for the separation of charged molecules.

17- In gel electrophoresis DNA molecules migrates towards. (**ANODE**)

18- The most commonly gel used in gel electrophoresis.

### **Long answer question**

- 1 Write about the Theory and Application of Flame photometry.
- 2 Discuss about the detectors used in Emission Photometry.
- 3 What are the advantages and disadvantages of Absorption Spectroscopy?
- 4 Explain the effect of intermolecular and intermolecular hydrogen bonding on fluorescence intensity.
- 5 Discuss the theory of Fluorimetry in brief.
- 6 Describe quenching effect. Explain the various factor for quenching.
- 7 Explain the role of Atomizers. And describe the limitations of AAS.
- 8 Discus the Theory and instrumentation of Atomic absorption spectroscopy.
- 9 Explain the principle of fluorescence and phosphorescence.
- 10 .write a notes on gel electrophoresis.
- 11 Principle and instrumentation of scanning electron microscope.
- 12 Describe the construction and working of transmission electron microscope.

## **UNIT V**

### **Short answer question**

- 1- Define quality control.
- 2- Type of validation.
- 3- ISO stands for.
- 4- What is BMR and master formula record?
- 5- What is audit?

### **Long answer question**

- 1 Basic difference between quality control and quality assurance.
- 2- Describe audit and their type.
- 3- Write notes On ISO 9000 series.
- 4- Write notes On BMR and master formula record.
- 5- Discus validation and their type.



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