

24-01-19

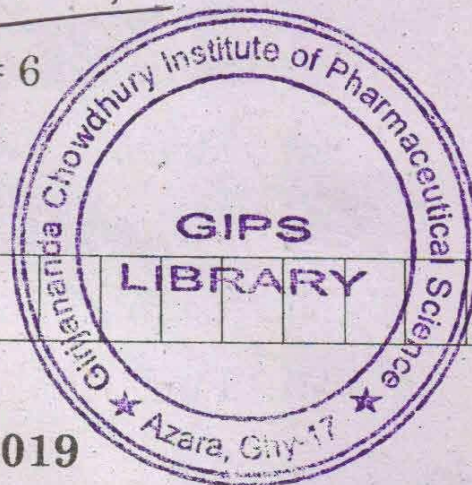
Total No. of printed pages = 6

PY 132706

Roll No. of candidate

--	--	--	--	--	--	--	--	--	--

2019



B.Pharm. 7th Semester End-Term Examination

PHARMACEUTICAL ANALYSIS - III

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks
for the questions.

Answer Question No. 1 and any six from the rest.

1. Answer the following :

(10 × 1 = 10)

(i) Which of the following component of a monochromator is the dispersing element?

- (a) The collimating lens
- (b) The entrance slit
- (c) Prism
- (d) None of the above

[Turn over

- (ii) Infrared spectroscopy provides valuable information about
- (a) Molecular weight
 - (b) Melting point
 - (c) Conjugation
 - (d) Functional group
- (iii) Which is not used in FTIR?
- (a) Detector
 - (b) Monochromator
 - (c) Light source
 - (d) All of the above
- (iv) Fluorescence property of a molecule increases by the presence of
- (a) $-\text{COOH}$
 - (b) $-\text{NH}_2$
 - (c) $-\text{NO}_2$
 - (d) $-\text{N}=\text{N}-$
- (v) In flame emission photometry, a photon of light with a wavelength specific for a given element is emitted when:
- (a) An orbital electron is raised to a higher energy state by incident light
 - (b) The bonds of the molecule vibrate and release light
 - (c) Thermal energy is absorbed by orbital electrons to a higher energy state and release energy when the orbital electrons return to the ground state
 - (d) The element absorbs ultraviolet radiation and release energy at longer wavelengths

- (vi) Which of the following is not used as fuel in Flame Photometry
- (a) Acetylene (b) Propane
(c) Hydrogen (d) Camphore oil
- (vii) Which of the following statements is wrong?
- (a) A conventional mass spectrometer employs high energy UV radiation
(b) A conventional mass spectrometer does not employ a spectrophotometric detector
(c) Conventional mass spectrometer does not always require samples of high purity
(d) A mass spectrum does not show signal for uncharged species
- (viii) Vicinal coupling is?
- (a) Coupling between ^1H nuclei of alkane
(b) Coupling between ^1H nuclei attached to adjacent C atoms
(c) Coupling between ^1H nuclei attached to same C atom
(d) Coupling between ^1H nuclei of alkene
- (ix) Column efficiency is measured in terms of number of plates which is
- (a) Inversely related to the square of the peak width
(b) Directly related to the square of the peak width
(c) Inversely related to the cube root of the peak width
(d) Directly related to the square of the peak width.

- (x) X-ray diffraction patterns are used for studying crystal structure of solids because
- (a) They have very high energy, hence they can penetrate through solids
 - (b) They are electromagnetic radiation, and hence do not interact with matter (crystals)
 - (c) Their wavelengths are comparable to inter-atomic distances
 - (d) Their high frequency enables rapid analysis

2. (a) Explain the basic principle of IR spectrophotometry with mentioning different types of vibrations. (7)

(b) What is the problem with using nujol oil as mulling agent in IR spectrophotometric technique? Elaborate the different sample handling techniques used in IR spectrophotometry. (2 + 6 = 8)

3. (a) Define Beer-Lambert's law. With illustration and reason, explain the different deviation that occurs in Beer-Lambert law. (2 + 4 = 6)

(b) List out the different parts of a UV-Visible spectrophotometer. With a neat figure, explain the working of a double split UV-Visible spectrophotometer. (4 + 5 = 9)

4. (a) Explain the principle of flame emission spectroscopy. With diagram, explain the working of a total consumption burner.

(5 + 4 = 9)

- (b) Explain the different factors affecting fluorescence. (6)

5. (a) Discuss the basic principle of NMR. (6)

- (b) What is chemical shift? Mention the factors affecting chemical shift. With example explain the process of coupling and coupling constant.

(1 + 3 + 5 = 9)

6. (a) Write the basic principle of HPLC. (5)

- (b) What is retention time? With neat diagram, explain the working of a HPLC instrument.

(2 + 8 = 10)

7. (a) Write a note on Radio Immuno Assay. (7)

- (b) With example write the difference between absorption spectroscopy and emission spectroscopy. Explain the different electronic transition that occurs in UV spectrophotometry.

(3 + 5 = 8)

8. (a) Explain the basic principle of fluorescence and phosphorescence as per Aleksander Jablonski.

(7)

- (b) Mention the different types of detectors used in IR spectrophotometer. Explain the working of a bolometer as IR detector.

(3 + 5 = 8)

9. (a) What is molecular ion? Explain the different ionization techniques used in mass spectrometer. (2 + 5 = 7)
- (b) Explain the working of Barrier Layer Cell and Photomultiplier tube. (4 + 4 = 8)
-