



**JBO-1612010701050400** Seat No. \_\_\_\_\_

**M. P. M. (Sem. V) Examination**

**January - 2020**

**Pharmaceutical Analysis - III**

Time : 3 Hours ]

[ Total Marks : 80

- Instructions :**
- (1) Figure to the right indicates marks.
  - (2) Answer the three (03) questions from each section.
  - (3) Question one (01) and question five (05) are compulsory.
  - (4) Draw neat and clean diagrams as required.

**SECTION - I**

1 Answer any seven out of ten : 14

- (1) Comment on: In presence of the polar solvent  $\pi-\pi^*$  transition produce bathochromic shift while  $n-\pi^*$  transition produce hypsochromic shift.
- (2) Differentiate chromophore and auxochrome with example.
- (3) Define : Red shift and Hyperchromic effect.
- (4) What is difference between fluorescence and phosphorescence?
- (5) Comment on: Atomic absorption spectroscopy is also known as absorption flame photometry.
- (6) Why acetylene-nitrous oxide flame is suitable for elements such as Al and Be in AAS?
- (7) What is Fermi resonance?
- (8) Why thermocouple is generally used in infrared region?
- (9) Discuss with reason, different types of transitions observed in phenol.
- (10) How IR spectra of  $\text{CH}_3\text{COOH}$  and  $\text{CH}_3\text{OH}$  would differ?

<b>2</b>	Answer the following question(s) :	<b>13</b>
	(1) Discuss Lambert-beer's law. Write about different factors that deviate beer's law.	<b>7</b>
	(2) What is difference between spectroscopy and spectrometry? Discuss about different types of spectra.	<b>6</b>
<b>3</b>	Answer the following question(s) :	<b>13</b>
	(1) Discuss different interferences in atomic spectroscopy.	<b>7</b>
	(2) Write basic principle and discuss instrumentation of flame photometry.	<b>6</b>
<b>4</b>	Answer the following question(s) :	<b>13</b>
	(1) Discuss different types of transition observed in molecules with example.	<b>7</b>
	(2) Write in detail about different types of vibrations observed in an organic molecule.	<b>6</b>

## SECTION - II

<b>5</b>	Answer any two out of three questions :	<b>14</b>
	(1) What is difference between IR and FT-IR. ? Discuss instrumentation of IR spectrophotometer.	<b>7</b>
	(2) Discuss Jablonski diagram in detail.	<b>7</b>
	(3) Write instrumentation and application of raman spectroscopy.	<b>7</b>
<b>6</b>	Answer the following question(s) :	<b>13</b>
	(1) What is calibration? How UV Visible and IR spectrophotometers are calibrated?	<b>7</b>
	(2) Give difference between raman spectra and infrared spectra. Discuss advantages of raman spectroscopy over infrared spectroscopy.	<b>6</b>
<b>7</b>	Answer the following question(s) :	<b>13</b>
	(1) Discuss theory of fluorescence and phosphorescence.	<b>7</b>
	(2) Discuss sample holder and materials used to prepare it for UV, IR and Flame photometer.	<b>6</b>
<b>8</b>	Answer the following question(s) :	<b>13</b>
	(1) Give ideal requirements of UV Visible detector. Write in detail about photomultiplier tube.	<b>7</b>
	(2) What is quenching? Explain process of quenching in fluorescence. Discuss factors responsible for quenching.	<b>6</b>