PSCPHYT16.1 - F2.1 - Foundation Course-II - Paper-XVI
Spectroscopic Application

P. Pages : 1

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GUG/S/23/11419

Time : Three Hours

Max. Marks : 80

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Either:

1. a) Explain the deviation from Beer's Law in spectroscopy. **8**

b) Draw schematic diagram of a phototube and explain photovoltaic cell in radiation detector. **8**

OR

e) Describe UV-spectrophotometer. Give the advantage of double beam instruments. **8**

f) Explain any two applications of Infrared spectroscopy to organic compounds. **8**

Either:

2. a) Discuss the theory of Nuclear Magnetic Resonance (NMR). **8**

b) Explain the electronic spectra of organic molecules with suitable examples on structure elucidation. **8**

OR

e) Discuss the fine structure of electronic vibrational transition. **8**

f) Explain spin-spin coupling between two nuclei. **8**

Either:

3. a) Explain recoilless emission and absorption of gamma rays. **8**

b) Explain magnetic hyperfine interaction and quadrupole interaction in Mossbauer Spectroscopy. **8**

OR

e) Explain How electron paramagnetic resources spectroscopy is successful in the study of Inorganic components. **8**

f) What is Zeeman Effect? Discuss types of Zeeman Effect. **8**

Either:

4. a) Discuss the basic principle and theory of mass spectroscopy. **8**

b) What are the ionization techniques used in mass spectroscopy? **8**

OR

e) What is the cost-effectiveness of using MALDI-MS for pathogen species identification? **8**

f) Briefly explain why the ionization source of a time-of-fight mass spectrometer must be operated in a pulse mode not continuously. **8**

5. a) Explain briefly infrared spectroscopy. **4**

b) Write a short note on chemical shift. **4**

c) Explain the determination and deviation of g-value. **4**

d) Discuss isotope abundance. **4**

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