

3 Hours

Total Marks: 100

1. Attempt **all** questions.
2. **All** questions carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator** is **allowed**.

**Q.1 a. State the role of: (Any Six)**

**06**

1. Viral capsid.
2. Peplomer.
3. Matrix Protein.
4. Viral replicase.
5. Movement proteins.
6. Reverse transcriptase.
7. Chorioallantoic membrane.
8. Hemagglutination assay.
9. Ammonium sulfate.

**Q.1 b. Elaborate on the following: (Any Two)**

**14**

1. Properties of virus.
2. Baltimore classification of viruses.
3. Cytocidal infection and mechanism of cell damage.

**Q.2 a. Give any one example of the following: (Any Six)**

**06**

1. Antibiotic against systemic mycoses.
2. Antiviral drug.
3. Polypeptide as drug.
4. Aminoglycoside.
5. Quinolones.
6. Sulpha drug.
7. Narrow spectrum antibiotic.
8. Metabolic antagonist drug.
9. Beta-lactum antibiotic.

**Q.2 b. Give an account of: (Any Two)**

**14**

1. Action of nucleic acid synthesis inhibitors.
2. Origin and transmission of drug resistance in bacteria.
3. Chemotherapeutic agents inhibiting cell wall synthesis in bacteria.

**Q.3 a. Do as directed: (Any Six)**

**06**

1. Name the instrument which requires sample in volatilized form for analysis.
2. Which instrument is used to assay enzyme that produces fluorescent product?
3. Give the detector used in atomic absorption spectrophotometer.
4. Name the changes in the positions of the atoms with respect to bond axis due to interaction with IR.
5. Luminescence produced by intervention of an enzyme is known as \_\_\_\_\_
6. Name any one oxidant gas used in atomic absorption spectroscopy.
7. What is Stoke's shift?
8. State true or false: Luminometer has two monochromators.
9. Name any one detector used in IR spectroscope.

**Q.3 b. Explain the following: (Any Two)**

**14**

1. Sampling technique and any three applications of IR spectrophotometry.
2. Principle and instrumentation of spectrofluorimetry.
3. Instrumentation and any two applications of atomic absorption spectrophotometry.

**Q.4 a. Give any one application of the following: (Any Six)**

**06**

1. Spacer arm.
2. Radioisotopes.
3. Anion exchanger.
4. Ligand.
5. GM counters.
6. Autoradiography.
7. Specific elution.
8. Affinity chromatography
9. HPLC column.

**Q.4 b. Discuss the following: (Any Two)**

**14**

1. Principle and applications of molecular exclusion chromatography.
2. Applications of radioisotopes in biological sciences.
3. Principle of scintillation counting, and any two advantages and two disadvantages of scintillation counting.

**Q.5 Write Short notes on the following: (Any Four)**

**20**

- a. Prions.
- b. Selective toxicity of antibacterial agents.
- c. Protein synthesis inhibitors.
- d. Light scattering spectrometry.
- e. Applications of Luminometry.
- f. Ion exchange resins.