

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. Do as instructed: (Any six)

06

1. Define Inclusion bodies.
2. What is Infectious Dose?
3. Give one example of plus strand RNA virus.
4. State true or false: Viruses are inactive macromolecules outside of the host cell and active only inside host cell.
5. Fill in the blank: The HIV virus, which cause AIDS destroy _____ cells.
6. Give one example of complex viruses.
7. Name the virus that attacks tobacco leaves.
8. What are plaques?
9. State the role of viral capsid.

Q.1 b. Give an account of the following: (Any Two)

14

1. Cultivation of animal viruses and plant viruses.
2. Baltimore Classification of virus.
3. Hemagglutination assay and plaque assay.

Q.2 a. Give one example of each: (Any six)

06

1. Antifungal drug.
2. Drug causing injury to plasma membrane.
3. Aminoglycosides.
4. Sulpha drug.
5. Bacteriostatic drug.
6. Cell wall synthesis inhibitor.
7. Nucleic acid synthesis inhibitor.
8. Narrow spectrum antibiotic.

9. Antimetabolic drug.

Q.2 b. Elaborate on the following questions: (Any Two) 14

1. Mode of action of Protein synthesis inhibitors with example.
2. Origin and transmission of drug resistance in bacteria.
3. Beta-lactam antibiotics and its action of cell wall synthesis inhibition with example.

Q.3 a. Attempt the following objectives as directed: (Any six) 06

1. Define anti-stokes shift.
2. Give one example of radiation source used in spectrofluorimeter.
3. What is a Golay cell?
4. Fill in the blank: Atomic absorption spectrophotometer is used in clinical laboratories, for the determination of _____ in body fluids.
5. Name the instrument in which no monochromator is used.
6. State the role of two monochromators used in spectrofluorimeter
7. What is fluorescence bleaching?
8. Give the working wavelength range for atomic absorption spectroscopy.
9. Give one advantage of spectrofluorimetry over spectrophotometer.

Q.3 b. Answer the following questions: (Any Two) 14

1. Discuss on the principle and any two applications of luminometry.
2. What is elastic light scattering? Elaborate on determination of molecular mass with multi-angle light scattering.
3. Give an account on the Principle and applications of Atomic absorption spectroscopy.

Q.4 a. Do as directed: (Any Six)

06

1. What is a cation exchange chromatography?
2. State true or false: Quaternary ammonium (Q) is a strong functional group used in anion exchangers.
3. Fill in the blank: In size exclusion chromatography _____ sized molecules will move at a faster rate in the column.
4. What is the use of salt gradient in ion exchange chromatography?
5. Give an example of an alpha decay.
6. Name any one emission of the most common forms of radioactive decay.
7. Define Half life of an isotope.
8. What is void volume in size exclusion chromatography?
9. What is an autoradiography?

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

14

1. With reference to affinity chromatography:
 - a. Ligand, examples of ligand and spacer arm.
 - b. Any three applications.
2. With reference to Scintillation counting:
 - a. Principle and types.
 - b. Two advantages and two disadvantages.
3. With reference to High performance liquid chromatography:
 - a. Concept and steps of Method development.
 - b. Validation parameters laid by ICH guidelines.

Q.5 Write Short notes on the following (Any four)

20

- a. Virioids.
- b. Reproduction of TMV.
- c. Fluorescence Immunoassay
- d. GM counters.
- e. Selective toxicity of antibacterial agents.
- f. Antiviral drugs.