

- a) wavelength of electron beam used b) number of atoms that lie in the electron path
- c) number and mass of atoms that lie in the electron path d) mass of atoms that lie in the electron path
- (viii) Where do we obtain the magnified image of the specimen in SEM?
- a) cathode ray tube b) phosphorescent screen
- c) anode d) scanning generator
- (ix) Which of the following techniques are used in Transmission Electron Microscopy (TEM) for examining cellular structure?
- a) Negative-Staining b) Shadow Casting
- c) Ultrathin Sectioning d) Negative-Staining, Shadow Casting, Ultrathin Sectioning, Freeze-Etching
- (x) Which of the following amino acid absorbs the light of 280 nm?
- a) tyrosine b) cysteine
- c) leucine d) valine
- (xi) In mass-spectrometry, proteins are separated base on their
- a) i-value b) c-value
- c) m/z ratio d) e/m ratio
- (xii) MALDI is a technique of _____
- a) ionization b) fractionation
- c) proteolysis d) cell counting
- (xiii) Which was the first protein to have its structure determined using X-ray crystallography?
- a) keratin b) myoglobin
- c) immunoglobulin d) globulin
- (xiv) In gel-filtration chromatography, the proteins _____
- a) bind to the column b) diffuse through the column
- c) denature d) vaporize
- (xv) What is the minimum distance for the eye to focus any object?
- a) 11 cm b) 25 cm
- c) 45cm d) 15 cm

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Write short notes on Scanning electron microscopy. (3)
3. Differentiate between SEM and TEM. (3)
4. Write short notes on spectrophotometer. (3)
5. Describe the shuttle vector system briefly. (3)
6. Explain the commonly used hybridization methods used for screening libraries. (3)

OR

Write a comparison between siRNA and miRNA (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. What is wave frequency, and how is it related to wave velocity and wave number? (5)
8. Criticize on some forms of light that cannot be seen by the human eye and why not? (5)
9. Explain the importance of the critical angle in dark field microscopy? (5)
10. Justify why holes are included in the carbon film used for high resolution studies of unstained biological macromolecules with cryo-electron microscopy? (5)
11. Illustrate the four forms of electrophoresis based on the type of buffer solution and its effect on the mobility of charged particles? (5)

12. Assess the conditions necessary for a successful dark field specimen using microscopy? (5)

OR

Choose factors that are important in choosing a dark field condenser for high NA objectives? (5)
