

Note: (a) All questions are compulsory. (b) Calculator are not allowed

Q.No	Question	CO	Marks
Q1	Case Study: A polyclonal antibody was raised against Hepatitis B Virus Antigen LHB. Epitope mapping shows the dominant epitope sequence of Antigen LHB, to be used for diagnostics as: WARGTYKL. The antibody raised was also tested against two other viral antigens of Hepatitis B Virus: Antigen MHB with dominant epitope having sequence: WARGTYKMP Antigen SHB with dominant epitope having sequence: VRGMGWMG Questions: a) Which antigen (MHB or SHB) will show higher cross-reactivity with the antibody raised and why? b) Explain the role of epitope similarity in cross-reactivity. c) Suggest one way to reduce false positives due to cross-reactivity.	II	[1+2+1=4]
Q2	Review how Rocket Immunelectrophoresis combines the principles of electrophoretic mobility and radial immunodiffusion to achieve rapid quantification of proteins. Assess why the height of the rocket-shaped precipitin peak is directly proportional to the antigen concentration.	II	[4]
Q3	Evaluate and correct the following statements. Provide suitable justification in support of your statement provided: (ANY TWO) a. Anti-IgM (Fc Portion) polyclonal antibodies are commonly used as secondary antibodies in ELISA. b. Direct ELISA provides better sensitivity of the assay in comparison to Indirect ELISA. c. Use of a coloured substrate and coloured enzyme is essential in ELISA, to produce a colorless product.	II, IV	[1.5 X 2 = 3]
Q4	Compare and differentiate between Direct and Indirect Agglutination with examples and application.	I, II	[4]