2/91 **2905N649** Candidate's Seat No :_____

B.Sc. Sem.-4 Examination

CC-205

Biotechnology (New)

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

1. Describe the principle and working of a simple microscope and explain the function of the various components of this microscope with diagram. 14

OR

(A). Discuss briefly about Stoke's law and preparative and analytical ultracentrifugation. 7
(B). Compare differential and density gradient centrifugation. 7

2. Describe principle, instrumentation and applications of UV-Visible spectroscopy. 14

OR

(A). Write about seven radioisotopes used as tracers in biology. 7
(B). Explain principle and applications of Mass and NMR spectrometry. 7

3. What is partition chromatography? Explain principle, procedure and applications of thin layer chromatography. 14

OR

(A). Discuss column chromatography and its types. 7
(B). Explain briefly about different types of adsorbents used in chromatography. 7

4. Describe principle, procedure and applications of SDS-PAGE 14

OR

(A). Explain in detail isoelectric focusing 7
(B). what is electrophoretic mobility and write about types of electrophoresis. 7

5. Answer any **seven** of the following: 14

1. Write the principle of phase contrast microscopy.
2. What is resolving power?
3. Write the function of ultracentrifuge.
4. What is electromagnetic radiation?
5. Name two instruments used to measure ionizing radiation.
6. Write two applications of IR spectroscopy.
7. Explain principle of Colorimeter.
8. What is the principle of Gas Chromatography?
9. What is adsorption and partition chromatography?
10. What does the electrophoresis apparatus consist of?
11. Write two applications of agarose gel electrophoresis.
12. Name factors affecting electrophoretic mobility.

(P.T.O)

2905N649 -2 Candidate's Seat No :_____

B.Sc. Sem.-4 Examination

CC-205

Biotechnology (Old)

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

1. Explain structure of immunoglobulin with diagram. Add note on structure and functions of IgM and IgA. 14

OR

(A) Explain the process of monoclonal antibody production and its significance? 7

(B) Describe Ouchterlony's double diffusion. 7

2. Describe briefly about organs of immune system. 14

OR

(A) Explain role of T-lymphocytes in cell mediated immunity with appropriate diagrams. 7

(B) Discuss the role of APCs in immune system. 7

3. Discuss structure, types and functions of MHC. 14

OR

(A) Write briefly about types of cancers. 7

(B) Explain HLA typing involvement in graft rejection with suitable diagram. 7

4.List various autoimmune disorders. Explain about organ specific causing direct cellular damage disorders. 14

OR

(A) Explain in detail about type I hypersensitivity. 7

(B) Write a note on congenital disease with an example. 7

Q.5 Answer any **seven** of the following : 14

1.Differenciate between paratope and epitope.
2. What are abzymes? Give example.
3.Write the function of complement system.
4.What is the role of 'Spleen' in immune response?
5.Name various types of granulocytes.
6. What are immunosuppressants? Give an example.
7.Write about MIF and MLR.
8. What is erythroblastosis fetalis?
9.Define Syngenic graft and Xenogeneic graft.
10.Write about CMIR.
11. Write about SCID.
12.Name two diagnostic tests used to detect autoimmune diseases.