

B.Sc. Sem.-4 Examination**CC-204****Biotechnology (New)****May-2025****Time : 2-30 Hours]****[Max. Marks : 70**

- Q.1 Define Antibody. Explain different classes of antibodies in detail. 14
- or
- (A) write a note on the immunological properties of antigens. 7
- (B) Discuss Complement fixation with diagrams. 7
- Q.2 Write examples of peripheral organs in the Immune system and their functions. 14
- or
- (A) Elaborate types of Antigen-presenting cells of the immune system. 7
- (B) Write a note on the Cell-mediated Immune response. 7
- Q.3 What is HLA typing? Discuss Graft rejection, its types, and mechanism in detail. 14
- or
- (A) Write a note on Radioimmunoassay and its limitations. 7
- (B) What is MHC? Explain its structure and classes with suitable diagrams. 7
- Q.4 Write a note on systemic autoimmune disorders stating two examples. 14
- or
- (A) Discuss Insulin-dependent Diabetes Mellitus. 7
- (B) Explain type I hypersensitivity reactions in detail. 7
- Q.5 Answer the following (any seven) – 14
1. What are Haptens?
 2. Write two differences between the light and heavy chains of an antibody.
 3. What is Monoclonal Antibody?
 4. What is the role of plasma B cells?
 5. Fill in the blank. T_H cells are CD_____+ve and T_C cells are CD_____+ve.
 6. What is the difference between primary and secondary immune response?
 7. What is immunosuppression?
 8. On which chromosome HLA genes are located in humans?
 9. What is the role of secondary antibody used in the ELISA technique?
 10. What is rheumatoid arthritis?
 11. Which class of antibody is involved in type II hypersensitivity reactions?
 12. What is autoimmune Anaemia?

(P.T.O)

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Q.1 Discuss Non-Mendelian inheritance and its importance in modern genetics. 14

OR

(A) Explain law of independent assortment with suitable examples. 7

(B) Explain three-point test cross and its significance in mapping. 7

Q.2 Write a detailed note on transcription in prokaryotes. 14

OR

(A) Explain Rolling circle model of DNA replication with diagrams. 7

(B) Describe genetic code and its importance in protein synthesis. 7

Q.3 Discuss Direct DNA repair process in detail. 14

OR

(A) What is mutagen? Write a note on chemical mutagens. 7

(B) What is Ames test? Discuss its process and significance. 7

Q.4 Explain Gene transfer through Transduction with suitable diagrams. 14

OR

(A) Write a note on Transposable elements. 7

(B) Describe non-homologous recombination illustrating suitable diagrams. 7

Q.5 Answer the following (any seven) – 14

1. What is the difference between a mono hybrid cross and a dihybrid cross?
 2. Write the Formula of Chi-square.
 3. Define Cis-Trans test?
 4. What is an allele?
 5. What effect does UV radiation causes on skin?
 6. Write role of single stranded binding proteins.
 7. Who gave the proof of semiconservative mode of replication?
 8. What is a lethal Mutation?
 9. Define Transition and Transversion.
 10. What is three-point Test cross?
 11. Write acronyms of three-stop codons.
 12. What is conjugation in bacteria?
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