

**FACULTY OF SCIENCE**  
**M.Sc. III-Semester (CBCS) Examination, March 2021**

**Sub: Biochemistry**  
**Paper – I : Gene Regulation and Genetic Engineering**

**Time: 2 Hours**

**Max.Marks:80**

**PART – A**

**Answer any five questions.**

**(5x7=35 Marks)**

- 1 Explain the negative and positive controls in Lac-Operon.
- 2 Explain the mechanism associated with sporulation gene expression
- 3 Describe the histone modification.
- 4 What is RNA stability? Explain the RNA editing.
- 5 Strategies involved in Screening (+ve) libraries.
- 6 Construct a genomic DNA library with suitable examples.
- 7 What are the roles of single-nucleotide polymorphisms (SNP) in cancer biology?
- 8 Explain about the RFLP.

**PART – B**

**Answer any three questions.**

**(3x15=45 Marks)**

- 9 Explain the Lytic / lysogenic cycles in lambda phage.
- 10 Explain the types of Ribosomes and ribosome switch.
- 11 What is gene Silencing? Explain differential Gene expression.
- 12 Enumerate Antigenic variation in Trypanosoma.
- 13 What is DNA Pyrosequencing. Explain the tools Solexa, SoLiD, Helicos. SMaRT, Ion Torrent with suitable example.
- 14 Explain the vectors with BAC, YAC diagram.
- 15 How yeast 2 hybrid system is useful in identification protein expression studies?
- 16 Discuss in detail about heterologous expression in mammalian cells.

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**Sub: Biochemistry**  
**Paper – II : Immunology and Immunotechnology**

**Time: 2 Hours**

**Max.Marks:80**

**PART – A**

**Answer any five questions.**

**(5x7=35 Marks)**

- 1 What are the differences between primary and secondary immune response? Add a note on memory cells.
- 2 Secondary lymphoid organs.
- 3 What are the consequences of complement fixation?
- 4 Cell mediated immunity.
- 5 immunogenicity and antigenicity.
- 6 Describe different tests used for diagnosis of hypersensitivity.
- 7 Differentiate precipitation reaction from agglutination reaction with suitable examples.
- 8 Radio Immuno Assay.

**PART – B**

**Answer any three questions.**

**(3x15=45 Marks)**

- 9 What are the distinguishing features of cells involved in adaptive system? Add a note on clonal selection theory.
- 10 Describe various theories related to antibody formation. Add a note on antibody diversity.
- 11 Describe different mechanisms used by pathogens to evade or subverting normal host defenses.
- 12 How are B and T cells activated? What happens when both T and B cells are activated?
- 13 What is immune deficiency? Add a note on disorders associated with immune deficiency.
- 14 Describe in detail about auto immune disorder with suitable examples.
- 15 Give an account of the different types of vaccines available today. How do m-RNA vaccines work? Highlight their advantages and disadvantages?
- 16 Describe various methods used for antigen and antibody binding analysis. Add a note on the applications of monoclonal antibodies.

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