

Seat No. : _____

NB-110

November-2022

B.Sc., Sem.-V

301 : Biotechnology (Molecular Biology)

Time : 2½ Hours]

[Max. Marks : 70

1. Write a detailed note on the Human Genome project and its applications. 14
- OR**
- (A) Illustrate the genetic map of *Saccharomyces cerevisiae*. 7
- (B) Discuss role of SNPs and SSR in mapping. 7
2. Elaborate on principles, procedures, and applications of DNA fingerprinting. 14
- OR**
- (A) Explain plasmid isolation from *E. coli* giving suitable diagrams. 7
- (B) Write a note on mRNA isolation and cDNA preparation. 7
3. Discuss examples of DNA modifying enzymes and their uses in rDNA technology. 14
- OR**
- (A) What is an artificial chromosome? Describe YAC in brief. 7
- (B) What is a vector in gene cloning? Discuss Cosmids as a vector. 7
4. Explain lytic and lysogenic control in bacteriophage. 14
- OR**
- (A) Write a note on negative regulation in the lac operon. 7
- (B) Explain attenuation regulation in operons by stating a suitable example. 7

5. Answer the following : (any seven)

- (1) Define a recognition site of Restriction enzymes.
- (2) Write the full form of VNTR.
- (3) How many units a lac repressor has ?
- (4) What is genome imprinting ?
- (5) Define Introns.
- (6) What is CpG island ?
- (7) Name 3 steps of RNA processing.
- (8) What is a cytogenetic map ?
- (9) Define pyrosequencing.
- (10) What is a shuttle vector? Write its advantage in genetic engineering.
- (11) Write the full form of SSCP molecular marker.
- (12) What is the difference between Cis and trans-regulatory elements ?