

I S Sadan

Subject Title: Molecular Biology and r-DNA Technology

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Unit - I: Genome organization and DNA replication**Essay questions:**

1. What are the experiments that prove DNA as genetic material? Explain
2. Write an essay on RNA as genetic material.
3. Explain about Organization of Eukaryotic nuclear genome.
4. What is Genome organization? Explain organization of Mitochondrial genome.
5. What is DNA replication? Write about DNA replication enzymes involved in the replication of DNA.
6. Explain about Replication of nuclear genome of Eukaryotes
7. What is Mutation? Explain types of mutations.

Short questions:

8. Replication of Prokaryotic genome
9. Organization of Chloroplast genome
10. Origin of replication fork
11. spontaneous, induced mutations
12. Organization of Prokaryotic genome
13. Griffith's experiment
14. RNA as genetic material-TMV

Unit - II: Gene expression in Prokaryotes and Eukaryotes**Essay questions:**

15. Describe the structure of eukaryotic gene.
16. What are RNA Polymerases? Explain their structural and functional features.
17. What is Genetic code? Explain its properties.
18. Write in detail about Deciphering of genetic code.

19. Define Genetic code. Explain about Wobble hypothesis.
20. Explain in detail about Transcription mechanism in prokaryotes.
21. Explain in detail about Transcription mechanism in eukaryotes.
22. What is Translation. Explain the mechanism of Translation in detail.

Short questions:

23. Structure of prokaryotic gene
24. Structure and functions of prokaryotic RNA polymerase
25. Genetic code
26. Deciphering of genetic code
27. Wobble hypothesis
28. rho independent & rho dependent termination

Unit -III : Gene Regulation in Prokaryotes and Eukaryotes**Essay questions:**

29. What is lac operon. Explain about lac operon in detail
30. Write an essay on tryptophan operon
31. What are Restriction endonucleases. Explain
32. What are Post-transcriptional modifications? Explain
33. Describe Post translational modifications.
34. Explain about Gal regulation in yeast.

Short questions:

35. Alternate splicing
36. Polyadenylation
37. Capping
38. Glycosylation
39. Ubiquitination

Unit -IV : Recombinant DNA technology**Essay questions:**

40. What is cloning? Explain about enzymes useful in molecular cloning.
41. What are Cloning Vectors. Explain various types of Cloning Vectors.
42. Explain about vectors used for library preparation.
43. What do you mean by gene transfer. Explain various Gene transfer techniques.
44. Describe different methods for selection of recombinant clones.
45. What is rDNA technology? What are the applications of recombinant DNA technology?

Short questions:

46. DNA Polymerase
47. DNA ligases,
48. PBR³²²
49. Shuttle vectors
50. Bacteriophage
51. Cosmids
52. BAC, YAC
53. Gene transfer techniques: Chemical methods
54. Biological methods
55. Colony hybridization
56. Applications of recombinant DNA technologies-pharmaceutics and medicine
57. Recombinant DNA technology in Agriculture, diagnostics