

D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1.

DEPARTMENT OF BIOTECHNOLOGY

MOLECULAR GENETICS

SECTION-A 6 MARKS

1. History Of DNA
2. Discuss nature of gene
3. Differentiate between leading and lagging strand
4. Replication fork
5. Genetic code and its characteristics
6. Post replication repair
7. Spontaneous mutation
8. Ant two types of mutation
9. Transcription of prokaryotes
10. Transcriptional attenuation
11. Basal transcription factors and its regulation by RNA Polymerase II
12. t-RNA processing
13. polyadenylation and spliceosome methods
14. DNA editing and degradation
15. mRNA stability
16. mRNA degradation
17. DNA demethylation and methylation
18. Histone modification
19. Control of transcription
20. Small RNA and its control
21. Antitermination
22. GAL pathway
23. Overview of gene expression
24. Factors involved in gene expression

25. Breaking and rejoining strands in recombination
26. RecA protein and its nature
27. Bacterial transposon
28. Retro transposon
29. Types of transposable elements
30. Significance of recombination
31. Significance of transposons
32. Nucleic acid Hybridization
33. Steps involved in PCR
34. Dolly
35. cDNA synthesis
36. RAPD - PCR
37. Gel electrophoresis principle
38. Restriction enzyme I and II
39. Southern blotting
40. Northern blotting
41. SDS – PAGE
42. RFLP
43. ERIC PCR
44. structure of DNA with suitable diagram.
45. Wobble hypothesis, contribution for the degeneracy of genetic code
46. Distinguish between 'σ' and 'θ' model of DNA Replication.
47. Semi conservative mode of replication
48. Zinc Finger and Leucine Zipper
49. Proteins involved in the DNA replication in eukaryotes.
50. Inhibitors of translation and its mode of action.
51. Arabinose Operon is different from other operones
52. Sex linked inheritance with a suitable example.

SECTION-B

15 MARKS

1. From Mendel to molecules
2. Eukaryotic gene structure
3. Replication
4. Transcription in prokaryotes
5. Transcription in eukaryotes
6. Translation
7. Post transcriptional modification
8. Post translational modification
9. Types of mutations
10. DNA repair mechanism
11. Processing of mRNA
12. Processing of tRNA and rRNA
13. Small interfering RNA and micro RNA
14. Alternative splicing and RNAi
15. Regulation through RNA processing and decay
16. mRNA stability and co-suppression through RNA turnover
17. Lac operon
18. Transcriptional control I and II
19. Attenuation and antitermination
20. Chromosome packing mechanism
21. Trp operon
22. Yeast GAL regulatory pathway
23. DNA sequence rearrangements in salmonella
24. DNA sequence rearrangements in trypanosoma
25. Homologous recombination
26. Site-specific recombination
27. Transposable elements
28. Genomic instability in Tn – discuss
29. Bacterial transposon
30. Eukaryotic transposon
31. Biological significance of recombination and transposable elements

32. Regulation of gene expression
33. Positive regulation of gene expression
34. Negative regulation of gene expression
35. Overview of central dogma of protein synthesis
36. structure of DNA with suitable diagram.
37. Lengthy linear DNA molecule be accommodate in the nucleus as condensed chromosomal structures
38. Types of Transposons.
39. Reverse transcription. What are the different activities shown by Reverse Transcriptase enzyme
40. Monohybrid inheritance with suitable cross as example.
41. What is Sex Linked Inheritance? A hemophiliac women has a mother who is phenotypically normal. What are the genotypes of her parents?
42. Linkage and Crossing Over.
