

**Code: 9A23403**

B.Tech II Year II Semester (R09) Regular &amp; Supplementary Examinations, April/May 2013

**GENETICS & MOLECULAR BIOLOGY**

(Biotechnology)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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1. (a) Describe the mechanism of splicing in m-RNA.  
(b) Explain the Lac-Operon model of gene regulation.
2. (a) Describe inhibitors of post transcriptional process.  
(b) Explain briefly about DNA finger printing technology.  
(c) Write briefly about disorders of coagulation.
3. Describe in detail the mechanism of transcription in prokaryotes.
4. (a) Describe briefly southern blotting techniques.  
(b) Explain multiple alleles.  
(c) Write briefly about post translational modifications.
5. (a) Describe structure and functions of DNA polymerases.  
(b) Explain the structure of t-RNA.  
(c) Explain law of independent assortment with suitable examples. Draw checker board.
6. (a) Describe structural organisation of nucleosome.  
(b) Explain Hershey and Chase experiment for identification of genetic material.
7. Explain various methods of sex determination in animals with suitable examples.
8. (a) Write about linkage.  
(b) Describe Lampbrush chromosomes.

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1. (a) Describe the structure of DNA.  
(b) Explain the construction of cDNA libraries.
2. (a) Describe Gal-Operon model of gene expression.  
(b) Explain briefly the process of protein synthesis.  
(c) Write briefly about colour blindness and its inheritance.
3. Describe the mechanism of regulation of gene expression in Eukaryotes.
4. (a) Describe structure and functions of RNA polymerases in Prokaryotes.  
(b) Write briefly about DNA Cloning.  
(c) Explain polytene chromosomes.
5. (a) Explain any two types of chromosomal disorders.  
(b) Write briefly about Northern blotting technique.  
(c) Describe splicing of t-RNA.
6. (a) Describe structure of m-RNA.  
(b) Explain any two types of gene interactions.
7. Explain the structure and types of chromosomes.
8. (a) Describe heterochromatin  
(b) Write about viral DNA (rolling circle) replication.  
(c) Explain law of segregation with special reference to monohybrid cross. Explain the cross with checker board.

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1. (a) Explain briefly the sex linked inheritance.  
(b) Write briefly about DNA damage and repair.
2. (a) Explain briefly Western blotting technique.  
(b) Describe structure functions of RNA polymerases in Eukaryotes.  
(c) Write briefly about regulation of Eukaryotic gene expression.
3. Explain the structures of different types of RNA molecules.
4. (a) Describe briefly about DNA cloning.  
(b) Given an account of non disjunction as a proof of chromosomal theory of inheritance.  
(c) Explain post-translational modifications in brief.
5. (a) Explain DNA sequencing.  
(b) Explain Lac Operon model of gene expression.  
(c) Describe the mechanism of DNA replication in E.coli.
6. (a) Describe the structure of chromosome in brief.  
(b) Explain briefly post transcriptional processing of m-RNA.
7. Explain the details of dihybrid cross with suitable examples. Add a note on the law proposed on this experiment.
8. (a) Explain the chemical composition of chromatin.  
(b) Describe cross-over process.  
(c) Write briefly about group antigens.

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1. (a) Describe autosomal disorders in man.  
(b) Explain factors influencing DNA denaturation.
2. (a) Describe replication in Bacteriophage M13.  
(b) Explain splicing of t-RNA.  
(c) Write about inhibitors of post transcriptional process.
3. Explain different steps involved in DNA cloning.
4. (a) Describe the structure of t-RNA.  
(b) Explain structure and functions of RNA polymerases in Prokaryotes.  
(c) Explain briefly North Western blotting technique.
5. (a) Explain Lampbrush chromosomes.  
(b) Write briefly about hemoglobinopathies.  
(c) Describe any two types of gene interactions.
6. (a) Describe structural organization of nucleosomes.  
(b) Explain monohybrid cross with suitable example.
7. Explain in detail the DNA damage and repair.
8. (a) Describe sex determination in plants.  
(b) Explain different types of chromosomes.  
(c) Write briefly about multiple alleles.

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