

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 154305

Roll No.

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**B.Tech.**

**(SEM. III) THEORY EXAMINATION, 2015-16**  
**GENETICS & MOLECULAR BIOLOGY**

**[Time : 3 hours]**

**[Total Marks : 100]**

**Section-A**

1. Attempt **all sections**. All sections carry **equal mark**. Write answer of each section in short. (2×10=20)
- (a) What is co-dominance?
  - (b) Differentiate between allele and gene.
  - (c) Mention the differences between DNA and RNA
  - (d) Define apoptosis.
  - (e) Define nonsense codons.
  - (f) Explain meaning of repulsion and coupling phase linkage.

- (g) Discuss Wobble hypothesis.
- (h) What do you mean by bidirectional replication?
- (i) Define Shine dalgarano sequence.
- (j) Define exon and introns.

### Section-B

Attempt **any five** questions from this section. (10×5=50)

2. State Mendel's law of dominance. Explain it with the help of examples.
3. Write a note on molecular chaperones.
4. What are the main diseases caused by errors in the number of sex chromosomes in the cells of an individual?
5. Explain the differences between prokaryotic and eukaryotic translation process.
6. Give an account about the various types of mutants.
7. How is transcription initiated in *E.Coli*?
8. Write a brief note on genetic code and its properties.
9. Discuss extra-chromosomal inheritance with examples

### Section-C

Attempt **any two** question from this section. (15×2=30)

10. Explain initiation, elongation & termination events in prokaryotic DNA replication.
11. Explain linkage and crossing over with diagrams. Why is crossing over so important for biological diversity on Earth?
12. Rajini and Rajan have decided to start a family. Rajan has normal vision but he has a brother who has a rare inherited form of blindness. Neither of Rajan's parents nor his two sisters are blind. Rajini has two brothers and two sisters with normal vision and neither of her parents are affected. Draw a pedigree to illustrate the situation using the standard symbols for males, females, affected, unaffected, carriers etc. Rajni and Rajan would like to have two children. What is the probability that either of their children will be blind? What is the probability that either children will be carriers? Explain your answers.

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