[4 printed pages.]

Your Roll No. 2231291502

Sr. No. of Question Paper : 1903 G

Unique Paper Code : 3124002003

Name of the Paper : Flow of Information in Living Systems

Name of the Course : **B.Tech. (Information Technology and Mathematical Innovations)**

Semester : III

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** questions.
3. Each question carries equal marks.

1. Describe the process of transcription and illustrate the process of initiation, elongation and termination during transcription of a gene. How is the process of transcription different from DNA replication? (15)

P.T.O.

2. What is DNA condensation and why is it required? Which proteins help in DNA condensation. (15)

3. Differentiate between **any three** of the following : (15)

(i) Exon and Intron

(ii) DNA and RNA

(iii) Template strand and Coding strand

(iv) DNA polymerase and DNA ligase

4. Describe mutations in DNA and RNA. *Why DNA mutations are more relevant than RNA mutation?* What are different types of mutations? Add a note on DNA repair and recombination in the context of mutation. (15)

5. What is the principle of gel electrophoresis, and how does it work? Discuss comparing Agarose and SDS-PAGE electrophoresis. (15)

6. What is DNA damage and what are the main types of DNA damage that can occur in a cell? Give examples of each. (15)