

(2½ Hours)

[Total Marks : 60

- N.B. :** (1) **All five** questions are **compulsory**.
 (2) **All** questions carry **equal** marks.
 (3) **Illustrate** wherever **necessary**.

- Q1. Describe different types of gene mutations. 12
OR
- Q1. (a) What are scaffolding proteins ? How do they affect chromatin structure ? 6
 (b) Giving examples explain gene families. State their significance. 6
- Q2. Describe in detail the regulation of the lactose and arabinose operon. 12
OR
- Q.2 (a) Discuss the role of RNA splicing in regulating gene expression in eukaryotes. 6
 (b) Which are the diseases associated with defects in gene regulation ? Explain. 6
- Q.3.(a) Describe the construction of cDNA library. 6
 (b) What are YACs ? Describe and state their applications. 6
OR
- Q3. What do you understand by transgenics ? Describe methods for constructing transgenic mice. 12
- Q.4. Explain the mechanism by which EGF signaling leads to cell division. 12
OR
- Q4. Describe in detail the intrinsic pathway of Apoptosis. 12
- Q5. Write short notes on any **three** of the following :— 12
 (a) Split genes
 (b) Bacterial transformation
 (c) LINE
 (d) mRNA half life
 (e) Master switches
 (f) Cell surface receptors.