

- N.R. 1) Q.No. 1 is compulsory.
2) Attempt any 3 questions from Q.No. 2 to 6.
3) All questions carry equal marks
- Q1. Answer the following (any 4):- [20]
a. What is the significance of amino acyl tRNA synthase in the process of protein synthesis?
b. Name and give functions of the proteins involved in eukaryotic replication.
c. Explain the mechanism of Prokaryotic transcription initiation.
d. Justify: Expression of Lac operon genes is leaky.
e. Explain Mendel's law of Segregation with the help of a suitable example.
- Q2. a. What is meant by Cot Curve? Explain its significance. [05]
b. Explain Holliday Model of recombination. [05]
c. In tomatoes, red fruit color is dominant to yellow. Suppose a tomato plant homozygous for red is crossed with one homozygous for yellow. Determine the appearance of: [10]
1. the F₁ tomatoes,
2. the F₂ tomatoes,
3. the offspring of a cross of the F₁ tomato plants back to the red parent,
4. the offspring of a cross of the F₁ tomato plants back to the yellow parent.
- Q3. a. What are Thiamine dimers? How are they formed? Explain the steps involved in the Nucleotide Excision Repair of Thiamine Dimers. [10]
b. Explain in detail the replication of the lagging strand in Prokaryotes. [10]
- Q4. a. Give an account of various post transcriptional modifications of mRNA in Eukaryotes. [10]
b. Explain the process of transcription in eukaryotes. [10]
- Q5. a. Explain the steps involved in Initiation of Translation in Prokaryotes. [10]
b. Give an account of the various Post-translational modifications of proteins. [10]
- Q6. a. Explain in detail the regulation of trp operon. [10]
b. What would be the status of the lac operon of *E. coli* growing in: [10]
1) Media containing both Lactose and Glucose
2) Media lacking both Lactose and Glucose