Q. P. Code: 16514

1T00414 - S.E.(BIOTECHNOLOGY)(Sem IV) (CBSGS) / 38601 - MOLECULAR GENETICS

Time: 3 hours [Total Marks: 80

N.B. 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. Explain in short about the various types of DNA?
b. What are the various types of numerical chromosomal aberrations?
c. How does the translation machinery locate the beginning of a gene in prokaryotes and initiate translation?
d. What is a base modifying agent? Give an example.
e. What is the significance of repressor protein in functioning of lac operon?

Q2. a. Explain Mendels Laws of inheritance with the help of suitable examples? [15]
b. In Jimsonweed, purple flower is dominant to white. Self fertilization of a particular purple flowered jimsonweed produces 28 purple flowered and 10 white flowered progeny. What proportion of the purple flowers will breed true? Justify your answer. [05]

Q3. a. Give an account of the various proteins involved in the DNA replication in prokaryotes. [10]
b. What are Thiamine dimmers? How are they caused? How is it repaired? [10]

Q4. a. Give an account of the process of transcription initiation in eukaryotes. [10]
b. Describe process of:
i. 5` Capping [10]
ii. 3` Tailing

Q5. a. Give neat labeled diagrams for the following (Any 2): [10]
i. Translocation of ribosome during translation
ii. Charging of tRNA
iii. Translation termination
b. What are codons? What are its characteristics? [05]
c. Explain Wobble hypothesis [05]

Q6. a. What will be the status of the lac operon when both Lactose and Glucose will be present in the medium? Justify your answer. [10]
b. Give functions of (any 2): [10]
i. Topoisomerase
ii. Peptidyl transferase
iii. Rho factor

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