(i) Heterochromatin and euchromatin

(ii) Prokaryotic and eukaryotic ribosome

(iii) DNA and RNA

(iv) Leading and lagging strand

4. (a) Explain the comparative mechanism of translation in prokaryotes and eukaryotes. (7)

(b) What is operon system? Explain in detail about the lac operon with well labeled diagrams. (8)

5. (a) Describe Meselson-Stahl experiment in detail and discuss the result produced from this experiment. (8)

(b) Discuss in detail the post-transcriptional processing of pre-mRNA in eukaryotes. (7)

6. (a) Explain in detail about the structure of tRNA and mention its significant roles in the process of translation. (8)

(b) What are the key enzymes involved in replication? Explain the mechanisms and roles of each enzyme. (7)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3312 **I**

Unique Paper Code : 2164003009

Name of the Paper : Fundamentals of Molecular Biology

Name of the Course : **General Elective: Botany**

Semester : V

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 **four** questions in all, including Question No. **1** which is compulsory.
3. **All** questions carry equal marks.
4. All parts of a question must be answered together.

1. (a) Define the following (**any five**) : (1×5=5)

(i) Spliceosome

(ii) Reverse Transcription

(iii) Pre-mRNA

(iv) Okazaki fragment

(v) Promoter

(vi) Nuclein

(vii) Chromatin

(b) Match the following : (1×5=5)

(i) H.G. Khorana	(a) Operon model
(ii) Jacob and Monod	(b) DNA is the genetic material
(iii) Fredrich Miescher	(c) Cracked the genetic code
(iv) Hershey and Chase	(d) Nuclein
(iv) Avery, Macleoid and McCarty	(e) Transforming principle of DNA

(c) Fill in the blanks : (1×5=5)

(i) _____ is known as initiation codon.

(ii) _____ is the example of repressible operon.

(iii) Z-DNA is the example of _____ handed DNA

(iv) _____ and _____ are the two types of nitrogenous base in DNA structure.

(v) _____ enzyme unwind the double stranded DNA into single stranded.

2. Write short note on the following (**any three**) : (3×5=15)

(i) Central Dogma

(ii) Watson and Crick's model of DNA

(iii) Fraenkel–Conrat's Experiment

(iv) Rolling circle replication

(v) Inhibitors of protein synthesis

3. Write difference between the following **(any three)** (3×5=15)