



Progressive Education Society's  
Modern College of Arts, Science & Commerce Ganeshkhind,  
Pune – 16, NEP 2020 (Autonomous)  
End Semester Examination: MAR / APR 2025

Total No. of Questions: 4/18

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**SECOND YEAR (SYBSc)**  
**MIC24101: BACTERIAL GENETICS**  
**(Semester IV)**

**Program:** BScGen03  
**Program Specific:** Microbiology  
**Course Type:** Major  
**Paper:** I

**Credits:** 2  
**Time:** 2 Hours  
**Max. Marks:** 30  
**SET:** A

**Instructions to the candidate:**

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Draw a well labelled diagram wherever necessary.

**Q1) Answer the following questions**

[5 X 1 = 5]

- a) Categorize the following into purines and pyrimidines: A, T, U, C.
- b) Site one example of conditional lethal mutation.
- c) The region where initiation of replication begins is called as \_\_\_\_\_.
- d) **Solve:** If there are 20 Guanine and 5 Thymine bases in a DNA double helix, how many Adenine and Cytosine are present.
- e) Discuss suppressor mutations.

**Q2) Answer any Five of the following questions.**

[5 X 2 = 10]

- a) Justify "Plasmids are used widely in Recombinant DNA technology.
- b) Discuss the conclusion drawn in Griffith's experiment.
- c) Relate: semi-discontinuous replication and Okazaki fragments.
- d) Explain the steps involved in transcription.
- e) Show that CsCl gradient centrifugation of DNA can be used to prove semi-conservative mode of DNA replication.
- f) Delineate action of UV rays on DNA.
- g) Relate: Stop codon and mutation.

**Q3) Answer any Two of the following questions.**

[2 X 5 = 10]

- a) Explain different bonds involved in DNA structure.
- b) Discuss the enzymes involved in DNA replication.
- c) Correlate base analogues and induced mutations.
- d) State the properties of plasmids and comment on Ti-plasmid.

**Q4) Answer any One of the following question.**

[5 X 1 = 5]

- a) Discuss mechanisms of spontaneous mutation.
- b) Define Translation. Explain elongation process in protein synthesis.

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NEP 2020