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SARDAR PATEL UNIVERSITY

B.Sc. Semester- V- NEP (Microbiology) Examination: October 2025

US05MAMIC01: Bacterial Genetics

Date: 04/10/2025, Saturday

Total marks: (50)

Time: 10:00 AM to 12:30 PM

Q – 1. Answer the following multiple choice questions: (10)

1. Who provided the first evidence that Griffith's transforming principle was DNA?
(a) Avery, MacLeod and McCarty (b) Watson & Crick
(c) Hershey and Chase (d) Meselson and Stahl
2. Watson & Crick model of DNA represent _____ form of DNA.
(a) A- form (b) Z- form
(c) B- form (d) D- form
3. Who experimentally proved that, the DNA replication is semi-conservative?
(a) Arther Kornberg (b) F. Griffith
(c) Meselson and Stahl (d) H. Khorana
4. Reverse transcription is the transfer of genetic information from _____.
(a) DNA to RNA (b) RNA to DNA
(c) DNA to t-RNA (d) t-RNA to m-RNA
5. The sigma factor of _____ has no catalytic activity but helps the core enzyme to recognize the promoter.
(a) RNA polymerase (b) Topoisomerase
(c) DNA ligase (d) DNA polymerase
6. Which of the following are non-sense codons?
(a) AUG and GUG (b) UUG and GAU
(c) AUC and UGG (d) UGA and UAA
7. If a purine base is substituted by a pyrimidine, or vice versa, the substitution is called _____.
(a) Transitions (b) Transversions
(c) Transpositions (d) None of these all
8. A mutation in which there is deletion or insertion of one or a few nucleotides is called a _____.
(a) Missense mutation (b) Nonsense mutation
(c) Silent mutation (d) Frameshift mutation
9. A cell that is able to take up DNA and be transformed is called _____.
(a) Conjugant cell (b) Transformed cell
(c) Competent cell (d) Reconstructed cell
10. Who studied bacterial conjugation for the first time?
(a) J. Lederberg and E. Tatum (b) F. Griffith
(c) Jacob and Monod (d) J. D. Watson



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Q – 2. Discuss in detail structure and chemistry of DNA. (10)
OR

Q – 2. (A) Explain events at replication fork with suitable figure. (05)
(B) Write a note on rolling circle model of DNA replication. (05)

Q – 3. (A) Discuss structure and functions of bacterial RNA polymerase. (05)
(B) Describe initiation of translation in bacteria. (05)

OR

Q – 3. Discuss in detail salient features of genetic code. (10)

Q – 4. (A) Describe replica plate technique. (05)
(B) What is frameshift mutation? Discuss with suitable examples. (05)

OR

Q – 4. (A) Write a note on chemical mutagens. (05)
(B) Discuss excision repair with suitable figure. (05)

Q – 5. (A) Discuss formation of merozygote and its fate. (05)
(B) What are plasmids? Discuss R-plasmid. (05)

OR

Q – 5. (A) What is bacterial conjugation? Discuss Hfr conjugation. (05)
(B) Write a note on specialized transduction. (05)

