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No. of Printed Pages : 2

SEAT No. _____

[47/A19]

SARDAR PATEL UNIVERSITY
B.Sc MICROBIOLOGY
USO6CMIC01
MOLECULAR GENETICS

Date: 26/03/18 (MONDAY)

TOTAL MARKS: 70

Time: 10:00 a.m to 1:00 p.m

Note: Figures on the right indicate marks

Que : 1 Attempt the following multiple choice questions.

(10)

- 1) Transposable elements were discovered by:
a) Barbara Maclintok c) Luria and Delbruck
b) Joshua and Esther Lederberg d) Griffith
- 2) This is a deaminating mutagenic agent.
a) Nitrous acid b) EES c) 5- Bromo uracil d) 2- amino purine
- 3) This process is chromosomally encoded.
a) Transformation b) Transduction c) Conjugation d) All of these
- 4) Natural transformation occurs in:
a) *Haemophilus influenza* c) *Haemophilus parainfluenzae*
b) *Bacillus subtilis* d) All of these
- 5) Chromosome mapping can be attained by :
a) Transformation b) Conjugation c) Transduction d) all of these
- 6) Auxotrophs are detected by colony -
a) Absent on both Minimal & Complete medium
b) Present on Minimal medium & absent on complete medium
c) Present on complete medium & absent on Minimal medium
d) Present on both Minimal & Complete medium
- 7) This is a nitrogen base analogue.
a) EMS c) Nitrous acid
b) 2 amino purine d) None of these
- 8) This is based on mutational reversion assay.
a) Fluctuation test c) Ame's test
b) Replica plate method d) None of these
- 9) This is a kind of Post replicational repair.
a) Base excision repair c) Mismatch repair
b) Nucleotide excision repair d) All of these
- 10) Curing occurs with.
a) Insertion sequences b) plasmids c) phages d) none of these

(1)

(P.T.O.)

Que 2: Attempt the following short questions (any ten)

(20)

- i) Define: a) Auxotrophs b) Prototrophs
- ii) Define: a) Competence b) Abortive transductant
- iii) Define: a) Conjugation b) Hfr Strain
- iv) Mention the role of : a) DNA glycosylase b) DNA methylase
- v) Draw the structure of Tn3.
- vi) What are insertion sequences?
- vii) Enlist any four points indicating the importance of bacteria in studying genetics.
- viii) How was conjugation discovered?
- ix) Differentiate between spontaneous and induced mutation.
- x) Differentiate between Homologous and Non homologous Recombination.
- xi) Explain photoreactivation.
- xii) Write the mode of action of Nitrous acid.

Que 3: Describe Fluctuation test and Replica plate method. Mention their significance. (10)

OR

Que 3: Explain point mutation and frameshift mutation in detail. (10)

Que 4: (A) Discuss Holliday model of homologous recombination. (06)

(B) Describe nucleotide excision repair of damaged DNA (04)

OR

Que 4: A) Describe Ames's test. (05)

B) Discuss SOS repair of DNA. (05)

Que 5: A) Explain the mechanism of transformation in *Streptococcus pneumoniae*. (07)

B) Explain the discovery of transduction. (03)

OR

Que 5: (A) Discuss the mechanism of specialized transduction citing a suitable example. (07)

(B) Explain the discovery of transformation. (03)

Que 6: Define Plasmid. Explain various type of plasmids. (10)

OR

Que 6: (A) Describe the process of interrupted mating for mapping of chromosome. (05)

(B) How are mating pairs formed? (05)

-----ALL THE BEST-----

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