[52/A-16]

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SEAT NO._____ No of printed pages: 02

SARDAR PATEL UNIVERSITY
B.Sc 6TH SEMESTER EXAMINATION 2019
MONDAY, MARCH 25TH, 2019
10.00a.m. to 1.00 p.m.
SUBJECT: MICROBIOLOGY US06CMIC01
MOLECULAR GENETICS Total Marks: 70

Q-1 Attempt Multiple Choice Questions: Choose the Most Appropriate One. (10)

1. Bromo Uracil induces mutation by ,----------
   a) Replacing bases in DNA b) By adding methyl group
   c) Inactivating repair enzymes d) Intercalating in to DNA
2. Which of the following is not a chemical mutagen?
   a) 2- amino purine b) Nitrous acid
   c) U.V. rays d) 5- bromo uracil
3. Replica plate technique can be used for.....
   a) proving spontaneous nature of mutations b) Isolation of auxotrophic mutants
   c) Isolation of drug resistance mutants d) All of these
4. Which of the following enzyme is responsible for photo reactivation?
   a) Reverse transcriptase b) Photolyase
   c) RNA replicase d) RNA polymerase
5. Holiday junction cleavage is carried out by,
   a) Ruv A b) Ruv B c) Ruv C d) None of these
6. Competence is regulated by special proteins include,
   a) DNA binding protein b) Cell wall autolysin
   c) Nucleases d) All of these
7. F plasmid is,
   a) Metabolic plasmid b) Conjugative plasmid
   c) Virulence plasmid d) Col plasmid
8. Which of the following have no natural competence?
   a) *Haemophilus influenzae* b) *Streptococcus pneumoniae*
   c) *Escherichia coli* d) *Bacillus subtilis*
9. What is true for Tn_3 ?
   a) It is Replicative transposon b) It contains gene for β- lactamase
   c) It confers resistance to ampicillin d) All of these
10. Which of the following coli phages is involved in specialized transduction?
    a) T_2 b) lambda c) T_4 d) None of these

(P.T.O)

Q-2 Attempt any ten (10) questions in short. (20)

1. How mutation occurs by nitrous acid?
2. What are frame shift mutations?
3. What is homologus recombination?
4. Differentiate induced and spontaneous mutation.
5. What is photo reactivation?
6. What is nucleotide excision repair? How it differs from base excision repair?
7. Draw an IS.
8. Mention differences of natural transformation systems of *Streptococcus pneumoniae* and *Haemophilus influenzae*.
9. What is transformasome?
10. What do you mean by F^+, F' and Hfr?
11. Enlist major characteristics that make bacteria useful tool for studying molecular genetics.
12. Write contributions of Barbara McClintock and Joshua Lederberg.

Q-3 What is spontaneous mutation? Explain evidences of spontaneous mutations in detail. (10)

OR

Q-3 (A) Explain methods for isolation of auxotrophic mutants (06)

(B) Describe mode of action of U.V. rays as mutagenic agent (04)

Q-4 Write an essay on: types of recombinations. (10)

OR

Q-4 (A) Explain mutagenicity and carcinogenicity test (05)

(B) Explain: SOS repair. (05)

Q-5 (A) Explain transformation in *Streptococcus pneumoniae* (06)

(B) Explain mechanism of transposition in replicative transposon. (04)

OR

Q-5 (A) Write a note on: Transformation in *Haemophilus influenzae* (06)

(B) Explain generalized transduction in brief. (04)

Q-6 Write an essay on: Conjugation as method of gene transfer in procaryotes. (10)

OR

Q-6 (A) Explain: plasmids and their types. (06)

(B) Explain discovery of conjugation. (04)

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