

[47/A-5]

SEAT No. \_\_\_\_\_

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No. of Printed Pages: 2

(47/A-5) SARDAR PATEL UNIVERSITY  
M. Sc. Integrated Biotechnology, Tenth Semester Examination  
Day and Date: Monday, 18-03-2019  
Time: 10:00 am to 1:00 pm  
Paper Code and Subject: PS10CIGGB1, Microbial Genetics

Total Marks: 70

Q-1 Multiple choice questions (All are compulsory).

[8x1=08]

- (i) Synaptonemal complex is disintegrated in \_\_\_\_\_ stage, from parts other than recombination site.  
a) Zygotene      b) Pachtene      c) Diplotene      d) Diakinesis
- (ii) First DNA glycosylase enzyme discovered is .....  
a) Uracil DNA Glycosylase      b) Thymine DNA Glycosylase  
c) Adenine DNA Glycosylase      d) Methyl Adenine Glycosylase.
- (iii) Cryptic plasmids  
a) do not exhibit any phenotypic trait      b) exhibit many phenotypic traits  
c) exhibit one phenotypic traits      d) exhibit antibiotic resistance
- (iv) IS elements on F plasmids allow homologous recombination between an F plasmid and the E. coli chromosome to create a(n) \_\_\_\_\_ bacterium.  
a) Hfr cell      b) F+ cell      c) F<sup>-</sup> cell      d) F' cell
- (v) Which of the following genes are constitutively expressed and control the plant induced activation of other vir genes?  
a) vir A and vir G      b) vir C and vir D      c) vir B and vir E      d) vir A and vir B
- (vi) Opine synthesis is the property  
a) conferred to plant cells when it transformed by *Agrobacterium tumefaciens*  
b) determined by the bacteria *Agrobacterium tumefaciens*  
c) both (a) and (b)      d) of normal plant cells
- (vii) Enzymes that catalyze strand transfer step during recombination are called as  
a) Recombinases      b) Transferases      c) Helicase      d) Gyrase
- (viii) What is the term used for a segment of DNA with one or more genes in the center and the two ends carrying inverted repeat sequences of nucleotides?  
a) Plasmid      b) Transposon      c) Insertion sequence      d) None of these

Q-2 Answer the following questions in short. (Any Seven)

[7x2=14]

- (i) Write how the naming of plasmid done giving an example.
- (ii) What do you mean by Bernard Davis experiment?
- (iii) Enlist the list of enzymes with functions involved in plasmid interconversion from one form to other.
- (iv) Write the importance of Lep  $\beta$  peptidase.
- (v) Write a note on base analogs and alkylating agents.
- (vi) Define the term synaptonemal complex.
- (vii) Write the importance of *agrobacterium* in the field of transgenic.
- (viii) Define the term Apoptosis.
- (ix) What a note on Retrotransposons.

( P.T.O )

- Q-3 (A) Discuss the mechanism of Nucleotide excision repair (NER) of pyrimidine dimer in detail. [ 06 ]  
(B) Explain SOS repair mechanism for damaged DNA. [ 06 ]

OR

- (B) Draw labeled ColE1 plasmid map and explain importance of RNA1-RNAII complex formation for its regulation. [ 06 ]
- Q-4 (A) Discuss the mechanism of conjugation between F + and F – cell. [06 ]  
(B) Discuss *recBCD* Pathway of Homologous Recombination for genetic recombination. [ 06 ]

OR

- (B) Give the figure of labeled Ti (Tumor Inducing) plasmid and discuss the mechanism of Agrobacterium mediated genetic transformation [06 ]
- Q-5 (A) Discuss the molecular mechanism of transformation in Gram positive bacteria. [06 ]  
(B) Explain the mechanism of specialized transduction in detail. [06 ]

OR

- (B) Explain Generalized transduction mechanism of P22, which infects *Salmonella typhimurium*. [06 ]
- Q-6 (A) Discuss the mechanism of transposition for bacterial Insertion sequences. [06 ]  
(B) Write the importance of DNA methyltransferases (MTases) and discuss Type I and II restriction and modification system. [06 ]

OR

- (B) Discuss the schematic model of Tn5 “cut and paste mechanism” transposition mechanism. [06 ]

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