[6-A] SEAT No._____ No. of Printed Pages: 02

Sardar Patel University

M. Sc. Int. Biotechnology, Tenth Semester Examination

Monday, 10th April, 2017

10:00 a.m. – 01:00 p.m.

***PS10CIGGB1*: Microbial Genetics**

Note:

1. Figures to the right indicate marks.
2. Draw neat and labeled diagram, wherever necessary.

Q-1 Attempt the followings [08 X 01 =08]

1. Frame shift mutation may occur as a result of
   a) Deamination of cytosine to uracil b) Formation of a thymine-dimer
   c) Conversion of guanine to xanthine d) None of the above
2. Which one of the following is essential for bacteria for DNA repair and recombination?
   a) DNA protein b) Rec A protein
   c) Thymidine kinase d) Chaperone proteins
3. Enzymes that catalyse strand transfer step during recombination are called
   a) Recombinases b) Transferases c) Helicase d) Gyrase
4. Bacterial plasmid contains
   a) RNA b) RNA + Protein c) DNA d) Photosynthetic structures
5. The T-DNA region of all Ti & Ri plasmids are flanked by direct repeat sequence
   a) 15bp b) 20 bp c) 25 bp d) 35 bp
6. Specialized transduction is mediated by
   a) Lytic phages b) Lysogenic phase c) Both a & b d) T4 phages
7. Restriction enzymes are enzyme
   a) Capable of cutting DNA molecule
   b) Capable of adding nucleotide to the 3'OH end
   c) Capable of restricting protein synthesise
   d) Capable of joining DNA moleucle
8. Enzymes are released during necrosis from
   a) Lysosomes b) Vacuoles c) Cytoplasm d) Golgi bodies

Q-2 Answer the following questions (**Any seven**). [07 X 02 = 14]

1. Discuss the mutation rate.
2. What is oxidation of bases?
3. Write down the functions of *RecBCD* gene.
4. Explain partial diploid.
5. Write down the features of plasmids.
6. Describe the abortive transduction in brief.
7. What is secretion system IV?
8. Differentiate between apoptosis and necrosis.
9. What is integron?

Q-3 (A) Describe the mechanism of mismatch repair system in *E. coli.* [06]

(B) "SOS response in *E. coli* is regulated by *LexA* & *RecA*" Explain in detail. [06]

OR

(B) Discuss the mechanism involved in regulating the control of copy number in plasmids. [06]

Q-4 (A) Explain the various events takes place during specialized transduction. [06]

(B) Explain the molecular mechanism of recombination with the help of Holliday model. [06]

OR

(B) Write short note on [06]

a) Male specific phase 2) Triparental mating

Q5 (A) Discuss the salient features of different types of restriction modification systems in brief. [06]

(B) Explain the mechanism of Hfr (High frequency recombination) conjugation in detail. [06]

OR

(B) Explain Leaf disc *Agrobacterium* mediated transformation method in detail along with its application. [06]

Q6 (A) Discuss various ways by which a proto-oncogene would get converted to an oncogene [06]

(B) Write a note on mitotic recombination of fungi. [06]

OR

(B) Discuss genetic organization and mechanisms of transposition for non-composite transposons with example. [06]

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