

[125]

SARDAR PATEL UNIVERSITY
M.Sc (II Semester) Examination (CBCS)
Monday, 3rd December, 2012
2:30 p.m. to 5:30 pm
Biotechnology
PS02CBIT02 – Microbial Genetics

TOTAL MARKS: 70

Q-1 MCQ:

[8]

1. What is the role of *uvrC* in *uvrABC* endonuclease repair pathway?
a) DNA binding protein c) Binds and nicks *uvrB*-DNA complex at 5'end
b) Fills in single strand gap d) Seals the nick.
2. Which protein binds with Holliday junction in homologous recombination?
a) RUV Protein c) RUV A
b) RUV AB d) RUV B.
3. Which of the following competence factor plays a role histidine kinase?
a) ComX c) Com S
b) Com K d) Com P
4. The wild type sequence of DNA was 5'—CAAUCCCG—3', which converted to 5'—CAAUCCCG—3' after mutation. Which type of mutation is it?
a) Base pair change c) Deletion mutation
b) Frameshift mutation d) Inversion mutation.
5. When viral DNAs or genomic RNAs are introduced into cells, it will be called as
a) Transfection c) Transformation
b) Conjugation d) None.
6. What is the role of *res* sequence in Tn3 transposons?
a) Recombination Site c) Regulator
b) Resolvase d) Transposase.
7. What is p53?
a) Tumor inducer gene c) Both
b) Tumor suppressor gene d) None.
8. Which of the following is an anti-apoptotic gene?
a) BAX c) Bcl2
b) BID d) BAK

Q-2 Answer the following in brief (Any Seven)

[14]

1. What is DNA damage? Enlist different types of DNA damages.
2. What is recombinational repair?
3. Differentiate Homologous and non-homologous recombination.
4. What is artificial competence?
5. Briefly write a note on abortive transduction.
6. Write down the features of M-13 phage.
7. What are the types of RM systems?
8. Differentiate Protooncogenes and Oncogenes.
9. Draw and label the structure of Ti-Plasmid.

Q-3. A) What is DNA Repair? Write a note SOS Repair pathway. [6]

B) What are Plasmids? Write about maintenance of Copy Number in Plasmids. [6]

OR

B) What are Spontaneous mutations? Explain Lederberg's Experiment. [6]

Q-4. A) Explain the mechanism of F-mediated transfer of DNA during the process of conjugation. [6]

B) Write down the molecular mechanism of site-specific recombination. [6]

OR

B) Enlist different types of phages. Give an account on any one of them. [6]

Q-5. A) Explain the role of vir genes in T-DNA transfer from Ti-plasmid to the host. [6]

B) Explain the determination of linked genes by transformation. [6]

OR

B) Write a note on specialized transduction in λ -phage and its applications. [6]

Q-6. A) What is a transposon? Enlist different types of transposons and write a note on Tn3 transposons. [6]

B) Write a note on retrotransposons with its applications. [6]

OR

B) What is a tumor? What are the causes of tumor formation? Explain tumor suppressor genes. [6]

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