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SEAT No. _____

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SARDAR PATEL UNIVERSITY
M.Sc. (III Semester) Biochemistry
24th October, 2018 (Wednesday)
2.00 P.M to 5.00 P.M
Paper: PS03CBIC22-Genetic Engineering

Marks: 70

Q.1 Choose the most appropriate answer.

(08)

1. Which of the following biomolecule is the most common contaminant in isolated nucleic acids?
a) Lipids b) carbohydrates c) Proteins d) vitamins
2. Which of the following enzyme is used in RFLP?
a) T4 Ligase b) Polymerase
c) Alkaline Phosphatase d) Restriction endonucleases
3. Expression vectors differ from cloning vectors in having
a) Selectable markers b) restriction sites
c) signals for transcription and translation d) smaller size
4. Which of the following character describes lacZ gene in pUC18 vector?
a) Encodes for antibiotic resistance b) encodes for β lactamase
c) encodes for β galactosidase d) encodes for transferase
5. Which of the following enzymes can be used to avoid self ligation of vectors?
a) Lipases b) Alkaline phosphatases c) endonucleases d) none
6. Which of following methods is suitable for introducing DNA into plant cells?
a) Biolistics b) Electroporation c) Microinjection d) Transformation
7. Which of the following methods is suitable for the measurement of change in gene expression?
a) Subtractive hybridization c) northern hybridization
b) Southern hybridization d) none of these
8. Metagenomics is the study of
a) Environmental DNA c) Genomes of animals
b) Metabolic pathways d) genetics of transformants

Q.2 Answer any seven of the following questions in brief.

(14)

1. Write a brief note on Ultrasonication
2. Advantages of pUC18 over pBR322.
3. Applications of cDNA library.
4. Principle of alkaline denaturation method for plasmid DNA isolation.
5. Basics of shot gun sequencing approach.
6. Define metabolic engineering with an example
7. What is Golden rice? Why was it developed?
8. State the salient features of primers used for PCR.
9. Write a note on ribotyping

①

(P T O)

- Q.3 a) What is Genomic DNA? Explain principle and steps and difficulties involved in the extraction of plant Genomic DNA. (06)
- b) Explain basic features of Yeast chromosomes. Describe cloning strategy and applications of YAC vectors. (06)

OR

- b) Explain how blue-white screening differs from red-white screening method? (06)
- Q.4 a) Write note on I) Yeast expression vectors (06)
- II) Role of Restriction endonucleases
- b) Describe the salient features of BAC and the strategy for cloning using this vector. (06)

OR

- b) Draw a schematic diagram of λ -bacteriophage genome. Give a comparative account of insertion and replacement vectors. (06)
- Q.5 a) Give an detailed account of Pyrosequencing of nucleic acids. (06)
- b) Explain in detail the principle of Real Time PCR . Explain any one chemistry used in real time PCR (06)

OR

- b) What are molecular markers? Explain the basic principle, advantages and applications of RAPD. (06)
- Q.6 a) Describe the principle involved in "herbicide tolerant" transgenic plants. (06)
- b) Describe PCR based site directed mutagenesis in detail. In what way this method is superior to single primer extension method? (06)

OR

- b) Discuss in detail the regulations for release of genetically modified organisms in India. (06)

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(2)