

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

No. of Printed Pages : 2

[129/A-24]

SARDAR PATEL UNIVERSITY  
B.Sc Microbiology  
USO6CMIC21  
Molecular Biology

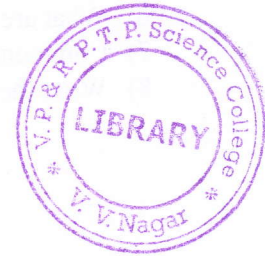


Date: 04/04/2022

Time: 03:00 to 05:00 p.m.

Total Marks : 70

- Que: 1) Attempt the following multiple choice questions. (10)
- This is involved in homologous recombination.  
a) Rec Y    b) Rec X    c) LexA    d) None of these
  - Who discovered an Hfr strain?  
a) Max Delbrück    c) Salvador Luria  
b) William Hayes    d) Frederick Griffith
  - Norton Zinder and Joshua Lederberg discovered the process of genetic \_\_\_\_\_.  
a) Transformation    c) Conjugation  
b) Transduction    d) Transposition
  - A linkage map of Hfr chromosome can be constructed using this as a measure.  
a) Locus of mutation    c) Transfer of F-factor  
b) Frequency of mating pair formation    d) Time of entry of genes
  - Colicin is an example of \_\_\_\_\_.  
a) Plasmid    b) Enzyme    c) Toxin    d) None of these
  - This is used in precipitation of DNA.  
a) Lysozyme    b) RNase    c) EDTA    d) Alcohol
  - EcoRI is a \_\_\_\_\_.  
a) Restriction endonuclease    c) Bacteriophage  
b) Plasmid    d) Transposon
  - Sir Alec Jeffereys discovered \_\_\_\_\_.  
a) DNA fingerprinting    c) Polymerase Chain Reaction  
b) Southern blotting    d) Restriction endonuclease
  - Which of the following can be used to introduce foreign DNA in a suitable host?  
a) Electrophoresis    c) Electroporation  
b) Electrolysis    d) All of these
  - DNA fingerprinting process utilizes \_\_\_\_\_.  
a) Labelled probes    c) Variable number of tandem repeats  
b) Polymerase chain reaction    d) All of these



- Que:2A) Fill in the blank. (04)
- Phage genome which is integrated into host bacterial chromosome is known as - \_\_\_\_\_
  - 'Tn' in Tn10 stands for \_\_\_\_\_
  - TEL sequences are found in \_\_\_\_\_ vector.
  - Taq polymerase has been isolated from \_\_\_\_\_

- Que: 2B) State whether the statement is true or false. (04)
- F-Plasmid confers resistance towards toxins.
  - Werner Arber discovered Restriction endonuclease.
  - Southern blotting is used to identify RNA.
  - Genetic transformation leads to genetic variability through vertical gene transfer.



Que:3) Answer any ten questions in short.

- 1) What are the outcomes of  $F^+ \times F^-$  mating?
- 2) Define: i) Competence  
ii) Recombination
- 3) Draw the structure of F-Plasmid.
- 4) What is the significance of Hfr strain?
- 5) Mention few points justifying the importance of bacteria as tools in studying genetics.
- 6) Draw the structure of pBR322.
- 7) What are the rules for nomenclature of restriction endonucleases?
- 8) What do you mean by Insertion sequences?
- 9) State few salient features of an ideal vector in r-DNA technology.
- 10) Enlist the properties of the ideal host used in r-DNA technology.
- 11) Differentiate between Southern and Northern blotting.
- 12) Enlist few applications of DNA fingerprinting.

(20)

Que: 4) Answer any four in detail.

- 1) Discuss the mechanism of genetic transformation in gram negative bacteria.
- 2) Explain generalized transduction as a means of gene transfer in bacteria.
- 3) Write a note on different types of bacterial plasmids.
- 4) Describe various mechanisms by which bacteria develop resistance against drugs.
- 5) Explain Enzymatic method of sequencing DNA.
- 6) What are the steps for isolation of DNA and RNA?
- 7) Comment and justify : 'Recombinant clones can be selected by different methods'.
- 8) Write the principle and procedure of Polymerase chain reaction.

(32)

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