



[22]

SARDAR PATEL UNIVERSITY

T.Y.B.Sc EXAMINATION - SEMESTER-VI

MICROBIOLOGY – US06CMIC21 (Molecular Biology)

Date: 23/6/2022

Time: 10:00 AM to 12:00 PM

Day: Thursday

Total marks: 70

N.B: Figures on the right indicate marks.

Q.1 Multiple Choice Questions.

10

- 1 The type of restriction enzyme used most extensively in rDNA technology is
(a) Type-I (b) Type-II
(c) Type-III (d) All of these
- 2 Cosmid is a plasmid with
(a) Minimum of 250 bp of λ DNA that includes cos site (b) Minimum of 200bp of M13DNA that includes cos site.
(c) Minimum of 100 bp of λ DNA that includes cos site (d) Minimum of 250 bp of T4 phage DNA that include cos site.
- 3 The Vectors commonly used for sequencing human genome _____
(a) YAC (b) Plasmid
(c) CMV Vector (d) M13
- 4 *Thermus aquaticus* is a source of _____
(a) Taq Ploymerase (b) Vent polymerase
(c) Primase enzyme (d) None of these
- 5 The first step of PCR is _____
(a) Denaturation (b) Annealing
(c) Primer extention (d) None of these
- 6 Ability of bacteria to take up foreign DNA is called
(a) Heterosis (b) Incompetence
(c) Competence (d) Infestasion
- 7 Specialized transduction is mediated by
(a) Lytic Phages (b) Lysogenic Phages
(c) Both A&B (d) None
- 8 Transposable elements were discovered by
(a) Barbara Mc Clintoch (b) Luria & Delbruk
(c) Joshua & Esther lederberg (d) Griffith
- 9 Natural transformation occurs in
(a) Haemophilus influenza (b) Haemophilus parainfluenza
(c) Bacillus subtilis (d) All
- 10 The Hfr chromosome is transferred to the F^- cell in a _____ way.
(a) Circular (b) Coiled
(c) Dimer (d) Linear

- Q.2 A State whether the given statements are true or false. 08**
- 1 Restriction enzymes are also called a molecular scissors.
 - 2 Generalized transduction occurred in the Temperate phage.
 - 3 The recipient bacteria in Conjugation are female bacterium
 - 4 An Episome is plasmid plus bacterial chromosome.

- B Fill in the blanks with appropriate answer.**
- 1 The first engineered plasmid vector is _____
 - 2 The PCR technique was discovered by _____
 - 3 The ability of bacterial cells to take up DNA fragments from surrounding is known as _____
 - 4 Discovery of Transduction was done by _____

- Q.3 Give SHORT answers to the following questions. (Attempt Any ten) 20**

- 1 What is competence?
- 2 What do you mean by F⁺, F⁻?
- 3 Write in brief about Electroporation.
- 4 Write about general steps involved in extracting DNA from the cell.
- 5 Enlist the types of restriction endonucleases and write in brief about Type-I RE.
- 6 Define: Cohesive end & Blunt end.
- 7 Discuss properties of good vector
- 8 Write about salient features of host.
- 9 Define: Electron Gun
- 10 Describe briefly DNA probe.
- 11 Write about reporter gene.
- 12 Discuss briefly microbes as a tool of molecular microbiology.

- Q.4 Answer the following LONG Question:- (Attempt any four) 32**

- 1 Explain the generalized transduction in detail.
- 2 Write about the role of F plasmid and discuss the Hfr conjugation.
- 3 Discuss the replicative transposition mechanism.
- 4 Discuss in details about Transposable elements.
- 5 Explain YAC in detail.
- 6 Discuss Maxim gilbert and Sanger sequencing.
- 7 Describe Polymerase Chain Reaction in detail.
- 8 Southern blotting technique.

— × —