



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

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[16/A-15]

## SARDAR PATEL UNIVERSITY

B.Sc EXAMINATION - SEMESTER-VI (2014-2017 Batch)

September-2022

### MICROBIOLOGY – US06CMIC02

(Tools and Techniques in Molecular Biology)

Date: 30/09/2022

Time: 3:30 PM to 5:30 PM

Friday

Total marks: 70

N.B: Figures on the right indicate marks.

Q.1 Attempt All Multiple Choice Questions.

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- 1 Strong deprotenizing agents are required to isolate \_\_\_\_\_.  
(a) RNA (b) DNA  
(c) Enzymes (d) None of these
- 2 Which method was developed by Maxam and Gilbert for DNA sequencing?  
(a) chemical degradation method (b) Enzymatic method  
(c) (A) and (B) both (d) None of these
- 3 Guanadinium thiocynate is \_\_\_\_\_.  
(a) Solvent of RNA (b) inhibitor of RNase  
(c) (A) and (B) both (d) None of these
- 4 Which of the following range of  $\lambda$  DNA can be packed in to phage particles?  
(a) 25-52 Kb (b) 38-48 Kb  
(c) 20-80 Kb (d) 38-52 Kb
- 5 Which vectors have the origin of replication of *E. coli* F factor?  
(a) pUC18 (b) YAC  
(c) pBR322 (d) BAC
- 6 Which vector has only one selectable marker?  
(a) pUC19 (b) pUC18  
(c) pSC101 (d) pBR322
- 7 Particle gun technique is also known as \_\_\_\_\_.  
(a) biolistics (b) gene gun  
(c) bioblaster (d) All of the above
- 8 Who developed the PCR technique?  
(a) Luty (b) Litt  
(c) Kary Mullis (d) W. Arber
- 9 \_\_\_\_\_ microscopic technique is used to visualize Microarrays.  
(a) Dark field (b) Fluorescence  
(c) Confocal (d) Electron

[P. T. O.]

(1)

- 10 Which of the following is known as Edman's reagent?  
(a) EDTA (b) Phenyl isothiocyanate  
(c) SDS (d) TEMED

**Q.2 A State whether the given statements are true or false.**

- 1 Reverse transcriptase enzyme is crucial in cDNA preparation.
- 2 All vectors used for propagation of DNA insert in a suitable host are called shuttle vectors.
- 3 In colony hybridization, proteinase K is used to digest and remove proteins.
- 4 RAPD means Restriction Amplified Polymorphic DNA.

**B Fill in the blanks with appropriate answer.**

- 1 DNA ligases are capable of forming \_\_\_\_\_ bonds.
- 2 Vectors which can replicate in to the cells of two different species are called \_\_\_\_\_.
- 3 DNA finger printing was developed by \_\_\_\_\_.
- 4 Microsatellite is also known as \_\_\_\_\_.

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

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- 1 Draw a flow chart of general steps involved in isolation of RNA from cells or tissues.
- 2 Differentiate between cohesive end and blunt end.
- 3 Write down the properties of type II restriction endonucleases.
- 4 Differentiate between cloning and expression vectors.
- 5 Enlist the properties of good host.
- 6 Draw the diagram of pUC18.
- 7 Define colony hybridization.
- 8 What are reporter genes?
- 9 What are the advantages of DNA foot printing?
- 10 Define RFLP.
- 11 Write on advantages of Microarrays.
- 12 Briefly describe minisatellite.

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

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- 1 Explain Sanger's method of DNA sequencing.
- 2 Describe isolation of DNA giving role of each chemical used.
- 3 Write a note on plasmid vector pBR322.
- 4 Describe Yeast Artificial Chromosome vectors.
- 5 Write notes on: (a) Southern hybridization  
(b) Marker inactivation
- 6 Discuss various methods of introducing r DNA in to the host.
- 7 What is probe? Describe methods for labeling of probes.
- 8 Discuss procedure and applications of polymerase chain reaction.