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SEAT No._____ No. of Printed Pages : 3

[70/A-13]

SARDAR PATEL UNIVERSITY

27th March 2019, Wednesday

B.Sc. Semester – VI Examination: March 2019

MICROBIOLOGY

(US06CMIC02: Tools and Techniques in Molecular Biology)

Time: 03 Hours – 10-00 am to 01-00 PM **Total marks: (70)**

Instructions: (1) It is compulsory to attempt all six questions.

(2) Marks of each question are indicated on the right.

Q. 1 Answer the following multiple choice questions: **(10)**

1. Which enzyme is used as molecular glue in r-DNA technology?
   (a) Reverse transcriptase (b) DNA ligase
   (c) S1 nuclease (d) None of these
2. Which of the following method is used for the isolation of DNA insert?
   (a) Southern blotting (b) Western blotting
   (c) Northern blotting (d) All of these
3. Who is known as father of genetic engineering?
   (a) Paul Ehrlich (b) Paul Berg
   (c) J. D. Watson (d) B.D. Davis
4. Which vectors have the origin of replication of E. coli F factor?
   (a) pBR 322 (b) pUC 18
   (c) BAC (d) YAC
5. Vectors which can replicate into the cells of two different species are called
   (a) Expression vectors (b) Cosmids
   (c) Shuttle vectors (d) None of these
6. Which of the following chemical agent is used to transfer r-DNA into the host cell by a chemical gene transfer method?
   (a) Ether (b) SDS
   (c) Poly ethylene glycol (d) All of these
7. Gene gun method was first developed at
   (a) Cornell University (b) Wisconsin University
   (c) University of California (d) Cambridge University
8. Which compound is used as an inducer in selection method using X-gal dye?
   (a) EDTA (b) IPTG
   (c) SDS (d) All of these

(1)

9. What is RAPD?
   (a) Random arranged polymorphic DNA.
   (b) Random amplified polymorphic DNA.
   (c) Replication amplified polymorphic DNA.
   (d) None of these.
10. Microsatellite is also known as
   (a) Simple sequence repeats (SSRs)
   (b) Variable sequence repeats
   (c) Recognition sequence
   (d) Palindrome

Q. 2 Answer the following questions in brief: (Attempt any ten) **(20)**

1. Name the chemicals used in extraction of RNA from cells.
2. Differentiate between cohesive end and blunt end.
3. What are linkers?
4. Enlist the properties of a good host.
5. Draw the genetic map of pUC18.
6. Give any two features of λ phage vector.
7. Explain the term marker inactivation?
8. What are reporter genes?
9. What is DNA finger printing?
10. Name the agents used in the labeling of the probes.
11. Write any two applications of microarray.
12. Give names of the DNA polymerases used in PCR.

Q. 3. Discuss nomenclature and recognition sequences for restriction endonucleases. **(10)**

OR

Q. 3. (A) Write a brief note on isolation of DNA. **(04)**

(B) Describe c-DNA library preparation. **(06)**

Q. 4. What are cloning vectors? Discuss in detail salient features of cloning vectors. **(10)**

OR

Q. 4. (A) Discuss features of pBR322. **(05)**

(B) Write note on pYAC3. **(05)**

Q. 5. Discuss the following:

(A) Electroporation. **(05)**

(B) Particle gun method. **(05)**

OR

Q. 5. Discuss the following:

(A) Selection of recombinant clones using X-gal dye. **(06)**

(B) DNA foot printing. **(04)**

Q. 6. (A) Give a brief account on probes. **(05)**

(B) Write a note on RFLP. **(05)**

OR

Q. 6. Discuss procedure and applications of PCR. **(10)**

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