SC

(A5)

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SARDAR PATEL UNIVERSITY

M. Sc. (Integrated) Biotechnology – Fifth Semester Examination

Monday, 4th May, 2015

10:30 a.m. to 01:30 p.m.

PS05CIGB02 - R-DNA Technology

Note: 1) Figures to the right indicate marks
2) Draw diagram wherever necessary

Total marks: 70

Q – 1 Choose the most appropriate alternative for the following: **(08)**

1. The optimum temperature for *in vitro* ligation is _____°C.
   a) 0-4 b) 37
   c) 25 d) 4-15

2. The marker gene used for screening of recombinants that are developed using pUC18 vector is _____.
   a) Ampicillin resistance gene b) Trp 1 gene
   c) Tetracycline resistance gene d) Lac Z gene

3. Amplification through multiple sets of primers is done with _____technique.
   a) Multiplex PCR b) Q-PCR
   c) RT-PCR d) OE-PCR

4. Optimum temperature for *Taq* DNA polymerase is _____°C.
   a) 27 b) 55
   c) 94 d) 72

5. PCR amplification of 16S DNA from metagenomic sample can be resolved by _____technique.
   a) RAPD b) AFLP
   c) SSR d) DGGE

6. How many number of maximum bands observed in the case of SCAR ?
   a) One b) Ten
   c) Twelve d) None of the above

7. In edible vaccines, _____ is used as a host.
   a) Plant b) Inactive virus
   c) Bacteria d) Animal

8. Crystal protein of *Bacillus thuringiensis* is toxic for _____ insects.
   a) Lepidoptera b) Megaloptera
   c) Diptera d) Orthoptera

[P.T.O.]

Q – 2 Attempt ANY SEVEN from the following: **(14)**

1. Describe endonuclease in brief.
2. Define probe and primer.
3. Give properties of ideal vector.
4. Enlist applications of PCR.
5. Give a brief account on *Pfu* polymerase.
6. Give the full form of RAPD, SSR, SCAR and DGGE.
7. Enlist different chemicals used in chemical degradation method.
8. What are applications of molecular farming?
9. Give examples of transgenic animals and microbes.

Q – 3 **(a)** Define rDNA molecule. Explain the basic steps involved in rDNA technology. **(06)**

(b) Write a note on DNA modifying enzymes. **(06)**

OR

(b) Describe the principle of reagents utilized for DNA isolation. **(06)**

Q – 4 **(a)** Explain the mechanism of PCR in detail. **(06)**

(b) Write a note on overlap extension PCR. **(06)**

OR

(b) Give an account on inverse PCR. **(06)**

Q – 5 **(a)** Explain why sequenase enzyme required ssDNA as template for sequencing. **(06)**

(b) Explain the methodology of RFLP. **(06)**

OR

(b) Write a note on pyrosequencing. **(06)**

Q – 6 **(a)** Give an application of rDNA technology in agriculture. **(06)**

(b) Write a note on metabolic engineering. **(06)**

OR

(b) Give a role of gene therapy to treat genetic disorders with suitable example. **(06)**

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