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(A-75) SARDAR PATEL UNVERSITY

M.Sc (III Semester) EXAMINATIONS

18th April, 2015

2.30 p.m to 4.30 p.m

PS03CBIC01 – rDNA technology

Maximum marks: 70

I. Choose the most appropriate answer: **(8x1 = 8 marks)**

1. A PCR reaction requires all of these except:
   (a) Primers b) dNTPs. c) Template DNA d) SDS

2. Which of the following enzyme is most preferred in recombinant DNA work to cut DNA?
   a) Restriction endonuclease I
   b) Restriction endonuclease II
   c) Restriction endonuclease III
   d) none of these

3. Which of the following type of vector would be most suitable for introducing DNA into a bacterial cell?
   (a) Plasmid (b) YAC vector (c) Ti plasmid (d) Adenovirus

4. Green Fluorescent protein (GFP) is used in identification of recombinant clones as
   a) a promoter
   b) a vector
   c) a reporter
   d) an insert

5. Polymerase chain reaction (PCR) was invented by
   a) Kary Mullis b) Frederick Sanger c) Maxam-Gilbert d) Messing

6. DNA sequencing by Sanger's method involves the use of
   a) dideoxynucleotide
   b) ribonucleotide
   c) fluorodinitrobenzene
   d) Microarray

7. The method of introducing recombinant DNA directly into a host cell by micro projectiles is known as
   a) Biolistics b) microinjection c) transfection d) transduction

8. RNA dependant DNA polymerase is also known as
   a) DNA polymerase b) RNA polymerase c) reverse transcriptase d) DNA ligase

II. Write briefly on <u>any seven</u>: **(7 x 2 = 14)**

a. pUC vectors
b. Cosmids
c. Southern blotting
d. Insertional inactivation
e. Disadvantages of electroporation
f. Basic principle of RFLP
g. Role of Vir A and G in Agrobacterium infection
h. Types of microprojectiles used in Biolistics
i. Primer annealing in PCR

III. Answer the following: **(4 x 12 = 48)**

1. a) Describe the principle and the procedure of **<u>any one</u>** method for the isolation of plasmid DNA. (6)

   b) List the various methods for fragmentation of DNA. What are the advantages of using type II restriction enzymes for cutting DNA molecules. (6)

   OR

   b) Write notes on
   i) YAC vector ii) baculovirus vectors (6)

2. a) Outline **<u>any one</u>** strategy adopted for ligation of non-compatible ends of DNA with an example. (6)
   b) Explain the basic principle of Polymerase Chain Reaction. (6)

   OR

   b) Outline the salient features of lambda ZAP II system in detail. (6)

3. a) Write notes on:
   i) Protoplast fusion ii) Liposome mediated DNA delivery (6)
   b) Explain the principle and applications of subtractive hybridization (6)

   OR

   b) Write notes on:
   i) Colony hybridization ii) Microsatellite markers (6)

4. a) Outline the properties and advantages of Green Fluorescent Protein (GFP). (6)
   b) Explain the basic principle and advantages, disadvantages of AFLP. (6)

   OR

   b) Explain the advantages and uses of site directed mutagenesis in detail. (6)

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