Printed Page:- Subject Code:- ABT0405

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - CARRY OVER THEORY EXAMINATION - SEPTEMBER 2022

Subject: rDNA Technology

Time: 3 Hours Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A 20

1. Attempt all parts:-

1-a. Who discover restriction enzymes? (CO1) 1

(a) Watson and crick

(b) Jacob and monad

(c) Nathan ,Arber and smith

(d) Boyer and Cohen

1-b. Restriction enzymes are also called (CO1) 1

(a) Molecular knives

(b) Molecular scissors

(c) Molecular scalpels

(d) All of these

1 Which of the following is a description of a clone? (CO2) 1

(a) The nucleus of a normal body cell

(b) A group of cells or organisms which are genetically identical and have all been produced from the same original cell

(c) A group of cells from the inner layer of an embryo which can grow into a variety of tissues

(d) a group of organism with the same parents

1 Which of the following terms is another name for somatic cell nuclear transfer ? (CO2) 1

(a) Embryo cloning

(b) Biomedical cloning

(c) Adult cell cloning

(d) Reproductive cloning

1 The PCR technique was developed by_____. (CO3) 1

(a) Kohler

(b) Altman

(c) Milstein

(d) Kary Mullis

1 Thermus aquatics is the source of _____. (CO3) 1

(a) Vent polymerase

(b) Primase enzyme

(c) Taq polymerase

(d) Both a and c

1 Genomic library construction is concerned with _____ (CO4) 1

(a) Gene isolation

(b) Protein production

(c) Antibiotics

(d) Regeneration

1 Which DNA is restricted to making a genomic library? (CO4) 1

(a) Genomic

(b) Plasmid

(c) Phage

(d) Plant

1 In which phase bacteria develop competence? (CO5) 1

(a) Late phase

(b) Log phase

(c) Metaphase

(d) Lag phase

1	You find that your protein sample loses activity during storage. What can you do about this? (CO5) (a) Add an additional purification step (b) Use a protease inhibitor during purification steps (c) Perform each step as quickly as possible, in a cold-room (d) All of the above	1

2. Attempt all parts:-

2.a.	What is the most significant application of rDNA technology? (CO1)	2
2.b.	Explain selectable markers. (CO2)	2
2.c.	Decribe various steps of a PCR experiment. (CO3)	2
2.d.	Distinguish between a cDNA library and a genomic DNA library. (CO4)	2
2.e.	What is chemical transformation in biotechnology? (CO5)	2

SECTION B 30

3. Answer any five of the following:-

3	How we can use the knowledge of DNA structure to improve plants and animals ? (CO1)	6
3	What is the role of polymerase in the recombinant DNA technology ? (CO1)	6
3	Describe the shuttle vectors and its role in rDNA technology. (CO2)	6
3	What are phagemid vectors ,can bateriophage be used as a vector ? (CO2)	6
3.e.	Give a brief overview of real-time PCR. (CO3)	6
3.f.	Make a flowchart that compares the general stages required in building genomic and complementary DNA (cDNA) libraries. (CO4)	6
3.g.	How can DNA be sequenced using the Maxam Gilbert or chain termination? (CO5)	6

SECTION C 50

4. Answer any one of the following:-

4	Explain in detail which is better Linker or adapter. (CO1)	10
4	What are the points to consider for choosing a vector? (CO1)	10

5. Answer any one of the following:-

5	What are the uses of YACs in biotechnology? (CO2)	10
5	What would happen if the restriction enzymes do not cut the DNA at specific recognition sequences? (CO2)	10

6. Answer any one of the following:-

6	How we can carry out nested PCR and Multiplex PCR in Lab. (CO3)	10
6	Give a description of the primers used in PCR. (CO3)	10

7. Answer any one of the following:-

7	What are the different Blotting techniques available? (CO4)	10
7	What do you mean by complementation of a defect in a cell line? (CO4)	10

8. Answer any one of the following:-

8	How does the Sanger method of DNA sequencing work? (CO5)	10
8	Write a detailed note on High-throughput sequencing data. (CO5)	10