2803E1390

Candidate's Seat No :_____

B.Sc. Semester-5 Examination

SE 305

Bio-Chemistry (A)

March-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Title of Course: Techniques in Biotechnology.

Instructions: 1. All Questions in Section I and Section II are compulsory and carry equal marks

2. Illustrate your answers with neat diagrams wherever necessary

Section I

Q1a) Explain the isolation and purification of chromosomal DNA from E. coli cells. At what wavelength of spectrophotometer, do we check the purity of DNA. (08)

b) Explain the steps of gene cloning with a labelled diagram (06)

OR

Q1 a) Explain transformation steps of E. coliand explain how recombinants are selected using pBR322 as vector. (08)

b) Write a note on lambda phage as a suitable vector. (06)

Q2a) Explain in detail Southern Blotting technique and its applications. (10)

b) Give an example to explain restriction mapping. Give its use. (04)

OR

Q2 a) Explain in detail with diagram Sanger's method & Maxam Gilbert's method of DNA sequencing. List the advantages&disadvantages of both the methods. (14)

Q3a) Explain in detail principle, working and applications of PCR (14)

OR

Q3 a) Write a brief note on any three types or variations of PCR (12)

b) List any two applications of PCR (02)

Q4 a) Define Transformation. Explain the process of transformation. (07)

b) Discuss bacterial conjugation between 1.F + & F- 2. Hfr&F+types. (07)

OR

Q8 a) What is Transduction? Explain in detail specialized and generalized Transduction. (14)

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Section –II

Attempt any 7 out of the following **(14)**

Q.1 Define plasmid. List two properties of an ideal vector

2 What is the role of ethidium bromide and agarose in DNA separation.

3 List two important properties of restriction Endonucleases.

4 What is the function of DNA ligase.

5 What is a Plasmid amplification. What is replica plating technique.

6 What is a Western Blot and a Northern Blot technique used for?

7 What is restriction mapping?

8 Write any two advantages of RT PCR.

9 What is q- PCR technique.

10 Define Conjugation& Recombination

11 Who discovered the process of bacterial conjugation

12 What are competent cells

2803E1390 –3 Candidate's Seat No :_____

B.Sc. Semester-5 Examination

SE 305

Bio-Chemistry (D)

March-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Paper : Biochemistry Elective [PLANT BIOCHEMISTRY]

Paper ELE: 305

Q.1 Write a brief note on: Plant tissue system 14

OR

Q.1 Explain in detail any three plant cell organelles system 14

Q.2 a. What is photosynthesis and how light and dark reaction takes place in plant . 12

b Define Photorespiration 2

OR

Q.2. Why calvin cycle is known as C_3, explain its reaction 14

Q.3 Describe briefly 14

a. Sucrose synthesis in plant

b. Breakdown of Sucrose

OR

Q.3 How plant fix nitrogen from atmosphere and explain the process of fixation 14

Q.4 Write a short note on 14

a. Auxin

b. Gibberelin

OR

Q.4. a. Explain 10 important points about Jasmonic acid 7

b. Describe briefly on Ethylene 7

P.T.O

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Q.5 Attempt Any Seven 14

1. Draw the structure of ground tissue of plant

2. Name the photosystems and give its role

3. Give two role of absiccic acid

4. Write a steps involved in non-cyclic photophosrylation

5. Write the reaction involved in nitrogen fixation

6. What is role of chloroplast and cell wall in the plant cell

7. Write 2 role of xylem in plant

8 Write 2 difference between C 3 and C4 metabolism

9. Draw detail structure of chloroplast

10 How nitrogen assimilation in plant

11. What is effect of Abscissic acid if its reduces in plant

12 . Write a two role salicylic acid in plant