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SARDAR PATEL UNIVERSITY

External Examination

B. Sc. Vth Semester

Date: - 15-11-2019, Day: - Friday

Time: - 10:00 am to 01:00 pm

Course: - US05CGEN03

Subject: Genetics Title: - Introduction to Genetic Engineering

Total Marks: 70

[10x1=10]

Q-1 Multiple choice questions (All are compulsory).

- (i) Which of these enzyme is used for dephosphorylation of the nucleic acids?
 A) Alkaline Phosphatase B) Polynucleotide kinase
 C) Terminal transferase D) Horse radish peroxidase
- (ii) Which of the following statement about a vector is correct
 A) all vectors are plasmids only B) plasmids, phages can be used as vectors
 C) fungi can also be used as vectors D) cyanobacteria can also be used as vectors
- (iii) The removal of Auxin and Cytokinin synthesizing genes from T-DNA is called:
 A) Excisioning B) Disarming C) cytokinesis D) troubleshooting
- (iv) Blue & White screening is governed by which genetic component/Gene?
 A) URA3 B) TRP1 C) Lac Z' D) HRP
- (v) The enzyme that is used to make the first strand of cDNA from mRNA is ;
 A) Reverse transcriptase B) Restriction endonuclease
 C) DNA polymerase D) T4 DNA ligase
- (vi) Which blotting technique is used for proteins?
 A) Southern B) Western C) Northern D) None of these
- (vii) What is the full form of IBC :
 A) Indian Biosafety committee B) Institutional Biosafety committee
 C) International Biosafety committee D) Institutional Biotechnology committee
- (viii) When foreign DNA is encapsulated in biomembranes for transformation is known as:
 A) Microinjection B) Electroporation C) Particle gun D) Liposomes mediated
- (ix) What is the full form of "FISH" technique?
 A) Fluorescent intrinsic Hybridization B) Fluorescent in situ Hybridization
 C) Fluorochrome in solution Hybridization D) Fluorescent in solution Hybridization
- (x) Pairing of two polynucleotide from different source means :
 A) Alignment B) Denaturation C) Hybridization D) Attachment

Q-2 Answer the following questions in short. (Any Ten)

[10x2=20]

- (i) Write a note on Homopolymer tailing.
- (ii) What are the applications of reverse transcriptase?
- (iii) Define competent cells and transformation.
- (iv) What are the main limitations of binary vectors?
- (v) What is the principle of electroporation technique?
- (vi) Mention any four features of desirable cloning vector
- (vii) Briefly mention the importance of IPR.
- (viii) Define cDNA library and mention its advantages.
- (ix) What is the rationale (principle) of blue- white selection?
- (x) What are the disadvantages of genomic library?
- (xi) Mention major differences between radiolabeled and non-radiolabeled probes.
- (xii) Mention various applications of genetic engineering.

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(PTO)

- Q-3 (A) Explain plasmid DNA isolation by alkali lysis method. [05]
(B) Mention features & applications of DNA ligase and Klenow fragment. [05]
- OR
- Q-3 (A) Write a brief note on DNA linkers and Adapters and their applications. [05]
(B) Give a comparative account of all the three classes of Restriction Endonucleases. [05]
- Q-4 (A) Give comparative account of pBR322 and pUC. [05]
(B) Write a brief note on YAC with diagram. [05]
- OR
- Q-4 (A) Explain with diagram Binary vectors and their limitations. [05]
(B) Explain with diagram any λ insertion vector. [05]
- Q-5 (A) Write an explanatory note on Intellectual Property Rights and its importance. [05]
(B) What are various applications of Genetic engineering for human benefits? [05]
- OR
- Q-5 (A) Write an explanatory note on biosafety measures for R-DNA technology. [05]
(B) Explain any two Physical methods of transformation. [05]
- Q-6 (A) Give a diagrammatic representation of Colony Hybridization. [05]
(B) Write a note on Non-radioactive probes, their types and advantages. [05]
- OR
- Q-6 (A) Write a short note on "Blotting technique for DNA" with diagram. [05]
(B) Draw a flow chart for the construction of Genomic library. [05]

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