[25] No. of Printed Pages: 02

SARDAR PATEL UNIVERSITY
BACHELOR OF SCIENCE (B.SC.)
VTH SEMESTER EXAMINATION NOV—NOV 2013 (CBCS)
MONDAY, 18TH NOVEMBER 2013
10:30A M TO 1:30 PM
SUBJECT: GENETICS
SUBJECT CODE: US05CGEN03
(Introduction to Genetic Engineering)

TOTAL MARKS: 70

Figures to the right indicate marks: **(1 x 10 = 10)**

Q1. Multiple Choice questions:

i) Which type of restriction enzymes are preferably used in genetic engineering:

A) Type-I B) Type-II C) Type-III D) None of these

ii) The DNA Polymerase enzyme is also known as:

A) DNA directed DNA polymerase B) RNA directed RNA polymerase
C) RNA directed DNA polymerase D) DNA directed RNA polymerase

iii) Which blotting technique is used for RNA?

A) Southern B) Western C) Northern D) None of these

iv) What is the full form of IBC :

A) Indian Biosafety committee B) Institutional Biosafety committee
C) International Biosafety committee D) Institutional Biotechnology committee

v) The cohesive ends in λ phage vectors are known as:

A) Restriction sites B) Cos sites C) Cap sites D) None of these

vi) Ti plasmid being used for introducing genes in plants is obtained from :

A) Escherichia coli B) Agrobacterium tumefaciens
C) Agrobacterium rhizogenes D) Klebsiella

vii) Shuttle vector can:

A) Replicate in single host B) Replicate in unique host
C) Replicate in two different host D) None of the above

viii) Beta galactosidase activity is expoited in which type of selection strategy:

A) Antibiotic based B) Red and White selection
C) Blue and White selection D) Green fluoroscenes

ix) Restriction enzymes were discovered by :

A) Meselson B) Keeley C) Nalhans & Meselson D) Arber,Smith & Nathans

x) Probes can be used in genetic engineering for

A) Detection & identification of nucleic acid sequences B) Sequencing of DNA
C) Amplification of DNA D) None of the above

P.T.O

Q2. Short Answer type questions (Attempt any TEN) (10 x 2 = 20 marks)

I. Define adapters and linkers.
II. Enumerate various properties of DNA ligase.
III. What are the main features of Ti plasmid.
IV. Mention three major differences between pBR and pUC vectors.
V. What do you mean by Cartagena protocol.
VI. Mention five applications of GMO in agriculture.
VII. Define genomic library and mention its two applications.
VIII. What do you mean by transformation.
IX. Mention various applications of probes.
X. Why TE is preferred for long term storage of DNA.
XI. What is Yeast episomal plasmid(YEP)?
XII. Define Hybridization.

Q.3.) Explain in detail the isolation of plasmid DNA by alkaline lysis method alongwith the rationale behind usage of chemicals employed. (10)

OR

Q.3.) Define Restriction Enzymes. Explain their various types, properties and applications in genetic engineering in detail. (10)

Q.4.A) Write a short note on pBR322. (05)
Q.4.B) Briefly explain Binary vector strategy with example. (05)

OR

Q.4.A) Make a diagrammatic representation of YAC (05)
Q.4.B) What are the properties and applications of vectors in genetic engineering. (05)

Q.5.) Briefly explain various methods of recombination selection & screening (10)

OR

Q.5.) Write a note on need of Biosafety regulations in recombinant DNA technology along with role of IBC and GEAC. (10)

Q.6.) Write short notes on:
A) cDNA library (05)
B) FISH and its applications (05)

OR

Q.6.) With Diagram explain Northern and western blotting techniques (10)

*****ALL THE BEST*****