SEAT No._____ No. of Printed Pages :02

[60]

Sardar Patel University
Semester examination-2020

B.Sc Vth Semester, Subject – Biotechnology
Course no. US05CBIT02 Date - 26.12.2020
Molecular techniques

Time – 2hrs **Marks-70**

NOTE- Figure in the right indicates marks .
All questions are compulsory. Make necessary diagram wherever needed.

Q.1. Multiple Choice Question (MCQ). Select correct answer from given MCQ. [10marks]

1.a. Which of the following chemical used for staining the DNA in agarose gel
(A) Ethidium bromide (B) Cesium bromide
(C) Silver chloride (D) Cesium chloride

1.b. Select the methods that can be used to engineered proteins-
(A) Hybridization (B) Site directed mutagenesis
(C) Real time PCR (D) DNA footprinting

1.c. Which of the following are not the components of polymerase chain reaction (PCR)
(A) DNA template (B) Taq DNA polymerase
(C) RNA polymerase (D) Primers and dNTPs

1.d. What does the technique of Southern blotting detect?
(A) DNA (B) RNA
(C) Proteins (D) Carbohydrates

1.e. Protein-protein interaction is can be studied through
(A) Northern blotting (B) Southern blotting
(C) Western blotting (D) South western blotting

1.f. Recombinant clones can be identified through
(A) Dot blot hybridization (B) Colony hybridization
(C) Insitu hybridization (D) All of the above

1.g. Which of the following is associated with DNA finger printing?
(A) Electrophoresis (B) RFLP
(C) Site specific mutagenesis (D) Shotgun cloning

1..h. A genomic library is
(A) The complete set of cloned fragments of DNA of an organism
(B) The complete set of individual chromosomal fragments
(C) The complete set of plasmid DNA
(D) The complete set of exons only

1..i. Chain termination methods of DNA sequencing utilize
(A) 2, 3 dideoxynucleotides (B) 3,4 dideoxynucleotides
(C) 4,5 dideoxynucleotides (D) 5,6 dideoxynucleotides

1.j. In DNA-gel retardation assay, which of the following complexes that are formed is analyzed?
(A) DNA-RNA complex (B) DNA-DNA complex
(C) RNA-protein complex (D) DNA-protein complex

P.T.O

Q2. Fill in the blanks/true false **(08marks)**

a. Mixture of DNA fragments are separated by----------
b. Transfer of RNA from agarose gel to nylon membrane is called----------
c. cDNA library can be prepared from----------
d. Maxam and Gilbert method of DNA sequencing are also called----------
e. Protein can not separated by SDS-PAGE. (True/False)
f. Probe is needed for hybridization reaction. (True/False)
g. Genetic marker can used for screening of recombinant clones. (True/False)
h. Invitro transcription is used for study of DNA-RNA interaction. (True/False)

Q.3. Short questions (2 marks each) attempt any ten **[2x10=20marks]**

[1] What is electrophoresis?
[2] Give brief comments on buffer used in agarose gel electrophoresis.
[3] Write notes on Taq DNA Polymerase.
[4] Enlist the steps required for FISH.
[5] What is nucleic acid hybridization ?
[6] Write short notes on application of southern blotting.
[7] What should be properties of ideal molecular markers?
[8] Write brief notes on Satellite DNA.
[9] What is cDNA Library?
[10] Give the requirements of invitro transcription.
[11] Why DNA sequencing is important?
[12] Enlist various systems for study of invitro translation.

Q.4. Attempt any four (4x8=32)

1. Explain the factors and methods of Agarose Gel Electrophoresis. **[08]**
2. Explains the requirements and process of Polymerase Chain Reaction. **[08]**
3. What is Southern hybridization? Explain with neat diagram. **[08]**
4. Explain Western blotting in detail with their application. **[08]**
5. How will you construct genomic DNA library? Explain in detail. **[08]**
6. Explain the process and application of DNA fingerprinting. **[08]**
7. Discuss the method of chain termination DNA sequencing. **[08]**
8. Enlist and explain different method of DNA foot printing **[08]**

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