

SEAT No. _____

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Sardar Patel University

Semester examination-2020

B.Sc Vth Semester, Subject –Biotechnology

Course no. US05CBNF23

Date -28.12.2020

Genetic engineering

Time – 2hrs (2 to 4 pm)

Marks-70

NOTE- Figure in the right indicates marks.

All questions are compulsory. Make necessary diagram wherever needed.

Q.1. Multiple Choice Questions.

10 M

1. In pBR322, BR stands for _____.
a) Plasmid bacterial recombination b) Plasmid bacterial replication c) Plasmid Boliver and Rodriguez d) Plasmid Baltimore and Rodriguez
2. Stuffer is _____.
a) The right arm of the vector DNA b) the left arm of the vector DNA c) Central fragment of the vector DNA d) none of the above
3. M 13 is an example of _____.
a) Filamentous phage b) Single stranded DNA vector c) Both (a) and (b) d) Plasmid
4. Expression vector differ from cloning vector as they have _____.
a) Ori b) Genetic marker c) Control elements d) Unique RE site
5. Extra chromosomal double stranded, circular DNA molecule present in bacteria which is widely used as a vector is called _____.
a) Phagemid b) Cosmid c) Plasmid d) Bacterial vector
6. Nucleic acid hybridization is used to identify _____.
a) RNAs b) DNAs c) Complementary base sequences d) Proteins
7. Enzyme used to join DNA fragments together is called _____.
a) DNA Polymerase b) DNA ligase c) Polynucleotide kinase d) Alkaline phosphatase
8. RAPD is _____.
a) DNA sequencing based method b) Restriction digestion based method c) PCR based method d) All of the above
9. Which of the following cannot be used as a vector?
a) Phage b) Plasmid c) Bacterium d) All can be used as vector
10. Which of the following vector can be used for gene transfer in mammalian cell?
a) YAC b) Retrovirus c) PBR 322 d) YCP

Q.2 Fill in the blanks/ choose True or False

08 M

1. The DNA molecule in which the gene of interest is integrated for cloning is called _____.
2. Wild types of cell are used for the transformation. (True/ False)
3. Expression vectors always contain DNA segments for the regulation of mRNA production. (True/ False)
4. Human cDNA libraries contain DNA for virtually all of the human proteins in vectors. (True/False)
5. M13 vector are constructed from _____.
6. _____ technique is used for *in vitro* amplification of DNA.
7. The process in which a probe is used to screen a library is known as _____.
8. _____ enzyme is present in bacteria that give blue colony in the presence of X-gal.

[4]

(P.T.O.)

Q.3 Short questions (2 marks each) attempt any ten

**20 M
(2X10)**

1. Which are the features a cloning vector should have?
2. Why expression vectors are so important?
3. What is RNase?
4. What are super vectors?
5. What is genomic DNA and cDNA library?
6. Write a brief note on application of northern hybridization.
7. What is tissue engineering?
8. What do you mean by repetitive DNA?
9. What are probes?
10. List applications of transgenic animals.

Q.4 Attempt any four

**32 M
(8X4)**

1. Explain steps involved in the construction of rDNA.
2. Discuss restriction enzymes used in genetic engineering in detail.
3. Explain with diagram the strategy to clone DNA fragments through YAC vector.
4. Discuss properties of Bacterial Artificial Chromosome with suitable example.
5. Discuss DNA fingerprinting and its applications.
6. Discuss RFLP in detail using suitable example.
7. What are stem cells? Discuss its properties, classes and applications.
8. With the help of an example explain how transgenic animals are created.

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