

SEAT No. _____

No. of printed pages: 02

[833]

SARDAR PATEL UNIVERSITY
M.Sc. Biomedical Science, Third Semester External Examination
Friday, 1st January, 2021
Time: 10.00 a.m. to 12.00 Noon
Paper Code: PT03CBMC21
(Genetic Engineering)

Total Marks- 70

Note: i) Attempt all questions.
ii) Marks are indicated on the right hand side.

Q.1 A Answer the following Multiple Choice Questions. All are compulsory

08

1. M 13 is an example of
a) Filamentous phage b) single stranded DNA vector c) both (a) & (b) d) plasmid
2. The most sensitive method for quantification of gene expression is ____.
a) PCR b) Real Time PCR c) Northern blot assay d) DNA sequencing
3. Klenow fragment is derived from
a) DNA ligase b) DNA Pol- I c) DNA Pol-II d) Reverse Transcriptase
4. Recombinant plasmids are added to a bacterial culture that has been pretreated with ____ ions.
a) Calcium b) Iodine c) Magnesium d) Ferric
5. An expression vectors
a) Always contain an origin of replication b) Usually contain a gene that confers antibiotic resistance to the bacterial host c) Always contain DNA segment for the regulation of mRNA production d) All of the above.
6. Which vehicles are often used for gene therapy to carry a healthy gene?
a) Plastic capsules b) powder balls c) Bacteria d) Viruses
7. A human cDNA library
a) Contain DNA for specific human proteins b) Contain DNA for virtually all of the human proteins in vectors c) Cannot be used to obtain human genes because it would be radioactive d) None of the above.
8. Tumor inducing plasmid used in producing transgenic plant is that of ____.
a) *E.coli* b) *B. thuringiensis* c) *A. tumefaciens* d) *S. aureus*

Q.1 B Answer the following

16

1. Eco RI exhibits a twofold rotational symmetry. TRUE/FALSE
2. RAPD cannot be used for PCR amplification. TRUE/FALSE
3. What acts as a chain terminator?
4. The type of DNA amplification where the region of DNA amplification lies on either side of a known segment is _____.
5. Which transgenic plant has rich source of Vitamin A?
6. The transformation method that uses tungsten or gold particles coated with DNA accelerated high velocity is called _____.
7. Which vector is commonly used for cloning human genome?

P.T.O

[13]

8. Which active enzyme is present in bacteria that give blue colony in the presence of X-gal?
9. What is the deposition of cDNA into the inert structure called?
10. First clinical gene therapy was done for the treatment _____.
11. How expression vector differ from cloning vector?
12. In purification steps of nucleic-acids, phenol is used for _____.
13. The process by which a probe is used to screen a library is known as _____.
14. Location of genetic markers is facilitated by physical mapping on the basis of the frequency of recombination. TRUE/FALSE
15. Conjugative plasmids consist of _____ gene for transfer.
16. Name the chemical nucleotide sequence method.

Q-2 Attempt Any Seven of the following

14

1. Define Isochizomeer and Neoschizomer.
2. What is DNA ligase? List its application.
3. What are the important features of cosmid?
4. What is Real Time PCR.
5. What is RNA sequencing? List its application?
6. Write the uses of FISH.
7. List the limitation of rDNA.
8. Write advantage and disadvantage of SNPs.
9. What is blue white selection?

Q.3 Explain steps involved in gene cloning and list its application.

08

OR

- Q.3** a) Explain construction of cDNA library. **05**
 b) Explain -Microinjection mediated gene transfer. **03**

Q.4 List the animal viral based cloning vectors. Write a note on any two.

08

OR

- Q.4** a) Discuss YAC a cloning vector. **05**
 b) Write note on eukaryotic expression system -Pichia pastoris. **03**

- Q.5** a) With an appropriate example discuss southern hybridization. **05**
 b) Discuss the criteria to be kept in mind while designing PCR primers. **03**

OR

Q.5 Write a short note on
 a) *In situ* hybridization b) RAPD **08**

- Q.6** a) What is gene therapy? Explain its types. **05**
 b) Indian guidelines for release and use of GM organisms **03**

OR

Q.6 Write a short note on
 a) Golden rice b) Bt cotton **08**

—————X—————