NEET Model Question Paper

CHAPTER –XI BIOTECHNOLOGY: PRINCIPLES AND PROCESSES

1. Restriction endonuclease
    a) Synthesizes DNA
    b) Cuts the DNA molecule randomly
    c) Cuts the DNA molecule at specific sites
    d) Restricts the synthesis of DNA inside the molecules
2. Gel electrophoresis is used for
    a) Construction of recombinant DNA by joining with cloning vectors
    b) Isolation of DNA molecules
    c) Cutting of DNA into fragments
    d) Separation of DNA fragments according to their size
3. The linking of antibiotic resistance gene with the plasmid vector become possible with
    a) DNA polymerase
    b) Exonucleases
    c) DNA ligase
    d) Endonucleases
4. Polyethylene glycol method is used for
    a) Biodiesel production
    b) Seedless fruit production
    c) Energy production from swage.
    d) Gene transfer without a vector.
5. Which one of the following is used as vector for cloning genes into higher organisms ?
    a) Baculovirus.
    b) Salmonella typhimurium.
    c) Rhizopus nigricans
    d) Retrovirus
6. DNA or RNA segment tagged with a radioactive molecules is called
    a) Vector
    b) Probe
    c) Clone
    d) Plasmid
7. Restriction endonucleases are enzymes which
    a) Make cuts at specific positions within the DNA molecule.
    b) Recognize a specific nucleotide sequence for binding of DNA ligase.
    c) Restrict the actions of the enzyme DNA polymerase.
    d) Remove nucleotides from the ends of the DNA molecules.
8. Stirred-tank bioreactors have been designed for
    a) Addition of preservatives to the products
    b) Purification of the product.
    c) Ensuring anaerobics conditions in the culture vessel.
    d) Availability of oxygen throughout the process.
9. Which of the following are used in gene cloning ?
    a) Nucleoids
    b) Lomasomes
    c) Mesosomes
    d) Plasmids

10. In genetic engineering, a DNA segment (Gene) of interest, is transferred to the host cell through a vector. Consider the following four agents (i-iv) in this regard and select the correct option about which one or more of these can be used as a vector/vectors

    i) Bacterium ii) Plasmid
    iii) Plasmodium iv) Bacteriophage
    a) (i),(ii) & (iv) b) (i) only
    c) (i) & (iii) d) (ii) & (iv)

11. Given below is a simple of a portion of DNA strand giving the base sequence on the opposite strands. What is so specialshown in it ?

    5'____ GAATTC____3'
    3'____CTTAAG____5'

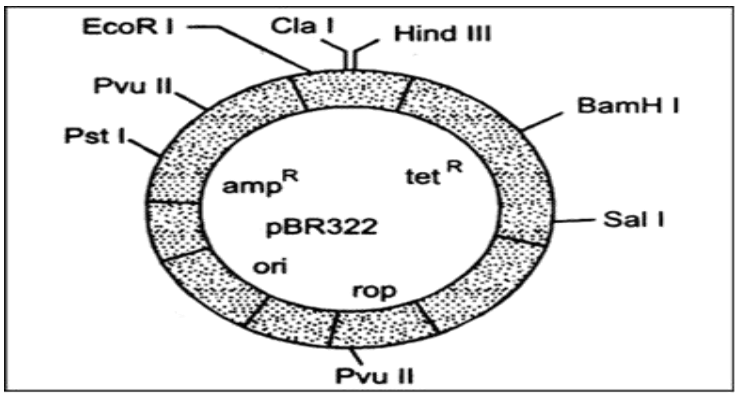
    a) Replication completed
    b) Deletion mutation
    c) Start condon at the 5' end
    d) Plindromic sequence of base pairs.

12. There is a restriction endomolecules called Eco RI. What does "co" part in it stand for ?
    a) Colon
    b) Coelom
    c) Coenzyme
    d) Coli

13. Agarose extracted from sea weeds is used in
    a) Spectrophotometry
    b) Tissue culture
    c) PCR
    d) Gel electrophoresis

14. Which one of the following techniques made it possible to genetically engineer living organisms ?
    a) Recombinant DNA techniques
    b) X-ray diffraction
    c) Heavier isotope labeling
    d) Hybridizatiion

15. The given figure is the diagrammatic representation of the E.Coli vector pBR322. Which one of the given options correctly identifies its certain components(s) ?



    a) Ori-original restriction enzyme
    b) Rop-reduced osmotic pressure
    c) Hin d III, Eco RI selectable markers
    d) Amp^R, tet^R – antibiotic resistance genes

16. PCR and restriction fragment length polymorphism are the methods for
    a) Study of enzymes

b) Genetic transformations
c) DNA sequencing
d) Genetic fingerprints

17. A singe strand of nucleic acid tagged with a radioactive molecules is called
    a) Vector
    b) Selectable marker
    c) Plasmid
    d) Probe
18. Which one of the following is a case of wrong matching ?
    a) Somatic Hybridization- Fusion of two diverse cells
    b) Vector DNA- Site for *t*RNA synthesis
    c) Micropropagation- *in vitro* production of plants in large numbers.
    d) Callus- Unorganised mass of cells produced in tissue culture.
19. Which one is a true statement regarding DNA polymerase used in PCR ?
    a) It is used to ligate introduced DNA in recipients cells.
    b) It serves as a selectable marker
    c) It is isolated from a virus.
    d) It remains active at high temperature.
20. For transformation, micro-particles coated with DNA to be bombarded with gene gun are made up of
    a) Silver or platinum
    b) Platinum or zinc
    c) Silicon or platinum
    d) Gold or trungsten.
21. Biolistics (gene-gun) is suitable
    a) Disarming pathogen vector
    b) Transformation of plant cells
    c) Constructing recombinant DNA by joining with vectors
    d) DNA fingerprinting.
22. In genetic engineering, the antibiotics are used
    a) As selectable markers
    b) To select healthy vectors
    c) As sequence from where replication starts
    d) To keep the culture free of infection.
23. Which one of the following represents a palindromic sequence in DNA ?
    a) 5'-GAATTC-3
       3'-CTTAAG-5'
    b) 5'-CCAATG-3'
       3'-GAATCC-5'
    c) 5'-CATTAG-3'
       3'-GATAAC-5'
    d) 5'-GATACC-3'
       3'-CCTAAG-5'

24. The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of
    a) Insertional inactivation of alpha galactosidese in recombinant bacteria
    b) Inactivation of glycosides enzyme in recombinant bacteria.

c) Non-recombinant bacteria containing beta galactosidase.
d) Insertional inactivation of alpha galactosidase.

25. Which of the following is not correctly matched for the organism and its cell wall degrading enzyme ?
    a) Algae - Methylase
    b) Fungi - Chitinase
    c) Bacteria - Lysozyme
    d) Plant cells - Cellulase
26. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by
    a) Electrophoresis
    b) Restriction mapping
    c) Centrifugation
    d) Polymerase chain reaction
27. An analysis of chromosomal DNA using the southern hybridization technique does not use
    a) Electrophoresis
    b) Blotting
    c) Autoradiography
    d) PCR
28. *In vitro* clonal propagation in plants is characterized by
    a) PCR and RAPD
    b) Northern blotting
    c) Electrophoresis and HPLC
    d) Microscopy
29. Which vector can be clone only a small fragment of DNA ?
    a) Bacterial artificial chromosome
    b) Yeast artificial chromosome
    c) Plasmid
    d) Cosmid
30. Commonly used vectors for human genome sequencing are
    a) T- DNA
    b) BAC and YAC
    c) Expression vectors
    d) T/A cloning vectors.
31. Which of the following is a plasmid ?
    a) pBR322
    b) BamH-I
    c) Hind-III
    d) EcoRI
32. Restriction endonucleases are must widely used in recombinant DNA technology. They are obtained from
    a) Bacteriophages
    b) Bacterial cells
    c) Plasmids
    d) All Prokaryotie Cells
33. Viral genome incorporated into host DNA is called

a) Prophase
b) Prophage
c) Bacteriophage
d) None of these

34. Two microbes found to be very useful in genetic engineering are
a) Crown gall bacterium and Conorhabditis elegens
b) Escherichia coli to Agrobacterium tumifaciens
c) Vibria choleraeand a tailed bacteriphage.
d) Dipococens species and psendomonasap

35. Who disconnected recombinant DNA technoledge ?
a) Har Gobind Khorana
b) James Watson & Francis Crick
c) Stanly Cohen & Herbert Boyer
d) Watter Sutton

36. Find out the wrong statement ?
a) Mobile genetic element, Transposons were visualized by Barbara Mc Clintock
b) Udder cell a somatic cell is used to produce the cloned sheep by nuclear transplantation method.
c) Dr. Ian Wilmut produced a cloned sheep called Dolley
d) DNA ligases are used to cleave a DNA molecule.

37. One of the key factors which makes the plasmid the vector in genetic engineering is that
a) It is resistant to antibiotics
b) It is resistant to restriction enzymes
c) Its ability to carry a foreign gene.
d) Its ability to cause infection in the host.

38. Which of the following is used as a best genetic vector in plants
a) Bacillus thurienglnesis
b) Agrobacterium thumifaciens
c) Psendomonas putida
d) All of the above

39. The polymerase chain reaction is a technique that
a) It is used for in vivo replication of DNA
b) It is used for in vivo synthesis of mRNA
c) It is used for in vitro synthesis of mRNA
d) It is used for in vitro replication of specific DNA sequence using thermostable DNA polymerase.

40. The construction of the first recombinant DNA was done by using the native plasmid of
a) E coli
b) Salmonella typhimurium
c) Bacillus thuringiensis
d) Agrobacterium.

41. Gel electrophoresis is used for
a) Construction of recombinant DNA by joining with cloning vectors.
b) Isolation of DNA molecules.
c) Cutting of DNA is to fragments.
d) Separation of DNA fragments according to their size.

42. Significant of 'heat shock' method in bacterial transformation is to facilitate ?
    a) Binding of DNA to the cell wall
    b) Update of DNA through membrane transport proteins.
    c) Update of DNA through transient pores in the bacterial cell wall.
    d) Expression of antibiotic resistant gene.
43. Which of the following palindromic bare sequences in DNA can be easily cut at about the middle by some particular restriction enzyme.
    a) 5'CACGTA 3' : 3'CTCAGT 5'
    b) 5'CGTTCG 3' : 3'ATGGTA 5'
    c) 5'GATATC 3' : 3'CTACTA 5'
    d) 5'GAATTC 3' : CTTAAG 5'
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    c) Plasmid
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    a) As selectable markers
    b) To select healthy vectors
    c) As sequence from where replication starts.

d) To keep the culture free from infection.

Answer Key

1. C
2. D
3. C
4. D
5. D
6. B
7. A
8. D
9. D
10. D
11. D
12. D
13. D
14. A
15. D
16. D
17. D
18. B
19. D
20. D
21. B
22. A
23. A
24. C
25. A
26. A
27. D
28. A
29. C
30. B
31. A
32. B
33. B
34. B
35. C
36. D
37. C
38. B
39. D
40. B
41. D
42. C
43. D
44. D
45. A
46. D
47. D
48. D
49. B
50. A

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