Biotechnology Principles and Process

CHAPTER-9

- 1. The first discovered restriction enzyme is.
- (a) Eco-RI
- (B) Hind II
- (c) Polymerase DNA
- (d) ligase

(B)

- 2. Created the first recombinant DNA -
- (a) Flore and Chen
- (b) Smith and Chen
- (c) Cohen and Boyer
- (d) Fleming

(C)

- 3. By which reaction can the DNA fragment generated by restriction endonuclease be separated in a chemical reaction?
- (a) Centrifugation
- (b) Gel electrophoresis
- (c) PCR
- (d) DNA fingerprinting
- (B)
- 4. Antibiotic resistance gene is present in PBR-322
- (a) ampR
- (b) tetR
- (c) Both A and B
- (d) None

(C)

- 5. The following is correctly matched-
- (a) Bacteria-lysozyme
- (b) Fungal chitinase
- (c) Plant-cellulase
- (d) all are correct
- 6. In bioreactor it is necessary-
- (a) temperature controller
- (b) pH control
- (c) aeration
- (d) all
- 7. In the separation of DNA, DNA is mixed to precipitate-
- (a) Irithidium bromide
- (b) agarose gel
- (c) cold ethanol
- (d) crystal particles
- 8. The enzyme which removes nucleotides from the ends of DNA is-
- (a) Endonuclease
- (b) Exonuclease
- (c) DNA ligase
- (d) DNA polymerase

(B)

- 9. In genetic engineering, it is known as 'molecular scissors/knife'.
- (a) Helicase
- (b) Restriction endonuclease
- (c) ligase
- (d) polymerase

(B)

- 10. For the first time, Stanley Cohen and Herbert Boyer (1972) succeeded in combining the antibiotic resistant gene with the basic plasmid of which bacterium in the production of recombinant DNA?
- (a) E.coli
- (b) Salmonella Typhimurium
- (c) Cholera

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(d) Streptococcus 16. The molecule that delivers the desired DNA to the host cell is-(B) (a) carrier 11. Which of the following is a means of (b) host recombinant DNA technology? (c) enzyme (d) parasite (a) restriction enzyme (b) DNA ligase 17. At which of the following places does the (c) carrier limiting enzyme EcoRI cut DNA? (d) all (a) GACCTG (b) AAATTC 12. The process of injecting recombinant DNA directly into the nucleus of the animal cell is-(c) GAATTC (d) GGGCCA (a) Jingan (b) biologic 18. Carrier DNA is-(c) micro injection (d) electrophoresis (a) Plasmid (b) C-DNA (C) (c) synthesized DNA (d) all 13. The method of making microscopic particles of gold or tungsten exposed to DNA 19. In addition to chromosomal DNA, there is enter the plant cell at high speed isadditional circular DNA found in the bacterial cell. (a) Gene Gun/Biolistic (a) episomes (b) PCR (b) Cosmid (c) microinjection (c) Plasmid (d) PCR (d) phasmid (A) (C)14. Restricted enzymes are found naturally in-20. In which cells does retrovirus transform normal cells in animal cells? (a) eukaryotic cell (b) bacteria (a) totipotent cell (c) yeast (b) cancer cell (d) all (c) mast cell (d) antigen cell (B)

15. Gene manipulation means-

- (a) adding genetic material
- (b) Removal of genetic material
- (c) correcting genetic material
- (d) all

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(B)

Short Answer Questions

1. What is Plasmid? Write the names of two restricted endonucleic enzymes

Answer: Plasmid:- In addition to the chromosomal DNA in the bacterial cell, the additional DNA with double helical structure is called plasmid. - Plasmid acts like a carrier. - Restriction endonucleases Eco RI and Hind II

- 2. What is a palindrome? Write the importance of Ti-plasmid obtained from Agrobacterium tumefaciens bacterium in biotechnology.
- 3. "Formation of recombinant DNA molecule is possible only by cutting the vector and source DNA by the same restriction enzyme." Explain the reason.

Answer: DNA fragments cut by the same restriction enzyme have the same type of "sticky ends". With the help of DNA ligase, one strand is joined together, which is possible after cutting by a single restriction enzyme.

4. Write the full name of GEAC and RFLP?

Answer: GEAC:- Genetic Engineering Approval Committee RFLP:- Restriction Fragment Length Polymorphism

- 5. What is meant by carrier? Write the properties of best carrier?
- 6. What is recombinant DNA? Write two basic steps of genetic modification of organisms?
- 7. Explain the nomenclature of restriction enzymes.
- 8. What is genetic engineering? With the steps of amplification of beneficial gene by PCR process
- 9. What is biotechnology? Write the steps of recombinant DNA technology and demonstrate this process with a schematic diagram.
- 10. What is PBR-322?

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Answer: PBR-322 - This is a plasmid which is used in molecular cloning. - In genetic engineering it is taken as a vector.

11. What is bioreactor (fermenter)? Write its use in biotechnology.

Answer: Bioreactor - A structure similar to a big vessel in which raw materials are converted into biologically specific products, enzymes etc. with the help of microorganisms, plants and animal cells is called bioreactor. - Their use is to obtain organic products in large quantities.

- 12. Draw only labeled pictures of the following:
- (i) $P^{BR} 322$
- (ii) Gel electrophoresis
- (iii) Recombinant DNA formation by EcoRI reaction

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