Biotechnology : Principles and Processes

CHAPTER 11

TRY YOURSELF

ANSWERS

1. Technique of genetic engineering are as follows :
(i) Formation of recombinant DNA *i.e.*, maintenance of microbial contamination free environment to have DNA with foreign gene, growth of only desired microbes in large amount for producing products.
(ii) Use of gene cloning for specific genes such as antibiotics, vaccines, enzymes, etc.
(iii) Gene transfer

2. Modern biotechnology is the development of genetically modified microbes/ plants/animals for human use.

3. Origin of replication or *ori* site in a plasmid is responsible for initiating replication.

4. Gene transfer is a technique that permits to isolate and introduce only one or a set of desirable genes without introducing undesirable genes into the target organism.

5. DNA ligase is used to link the isolated desired gene with a vector.

6. The letter R in the *Eco*RI is derived from first letter of the name of strain of *Escherichia coli, i.e.*, RY 13 from which this enzyme is derived.

7. DNA segment with same sequence of nucleotide in forward and backward direction is known as palindromic sequence. This segment is recognised by restriction endonuclease for being cut.

8. If a linear DNA molecule is digested with a restriction enzyme having five recognition sites, it will produce six segments.

9. The term plasmid was first introduced by the American molecular biologist Joshua Lederberg in 1952.

10. Lambda phage vectors and M13 vectors are the most commonly used bacteriophage vectors.

11. Cloning vector M13 phage is filamentous phage which infects *E. coli* having F-Pili. Its genome is a single stranded circular DNA of 6407 bp.

12. Electrophoresis is a technique to separate charged molecules such as DNA, RNA or protein, under the influence of an electrical field, so that they migrate in the direction of electrode bearing the opposite charge. Since DNA fragments are negatively charged molecules, they can be separated by allowing them to move towards the anode (+ ve electrode) under an electric field through a matrix of agarose gel.

13. Protease removes histone and ribonuclease removes RNA.

14. PCR is highly useful for the diagnosis of various diseases in humans because of its highly accurate specificity and sensibility. Recently PCR is also used in HIV detection.

15. In the sparged stirred tank bioreactor, the stirrer facilitates the mixing of oxygen availability throughout the bioreactors.

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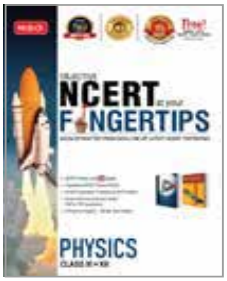

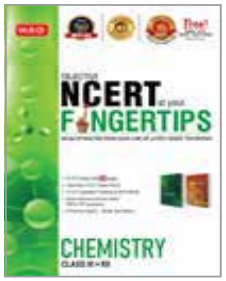

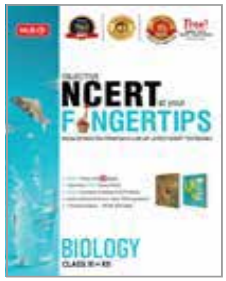

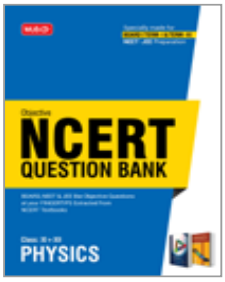

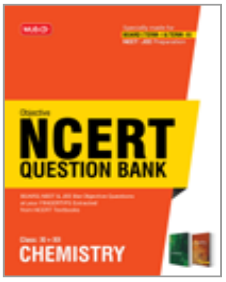

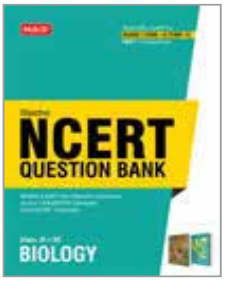

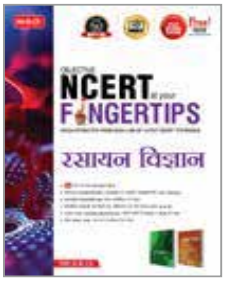

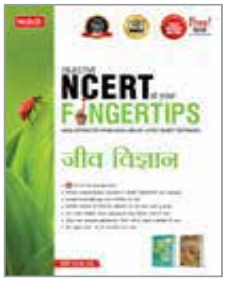

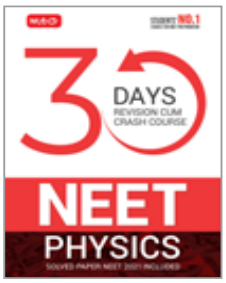

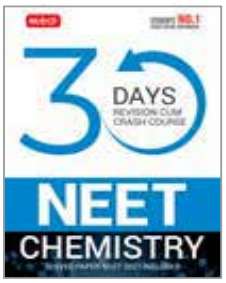

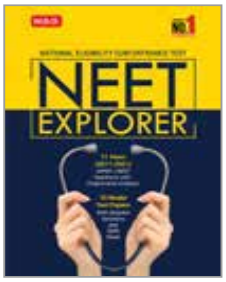

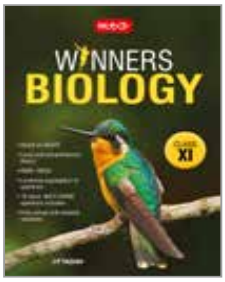

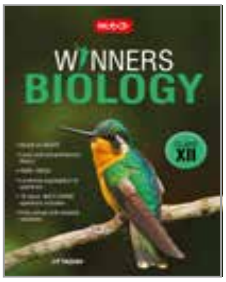

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