



# BIOLOGY

## BOOKS - MODERN PUBLICATION

### PRINCIPLE AND PROCESS OF BIOTECHNOLOGY

#### Exercis

#### 1. Restriction endonuclease

- A. molecular build up at nucleotides
- B. molecular degradation to DNA breakup
- C. molecular knives for cutting DNA at specific sites
- D. molecular cement to combine DNA sites.

**Answer:**



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2. Enzymes breaking nucleic acids into nucleotides are called:

A. hydrolases

B. amylases

C. nucleic acidases

D. nucleases

**Answer:**



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3. Recombinant DNA technology is related with:

A. Stanley Cohen and Herbert Boyer

B. Bateson and Punnet

C. Huxley and Harvey

D. Schleiden and Schwann

**Answer:**



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4. Cosmid is:

A. extragenetic material in Mycoplasma

B. Circular DNA in bacteria

C. extra DNA in bacteria

D. fragment of DNA inserted in bacteria for  
forming copies

**Answer:**



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5. Plasmid is used as carrier because:

- A. It has both ends with replicating points
- B. It has no free ends
- C. It is circular DNA with a capacity of binding with eukaryotic DNA
- D. All of the above

**Answer:**



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6. The Ti plasmid used in genetic engineering is obtained from:

- A. *Bacillus thuringensis*
- B. *Agrobacterium rhizogenes*
- C. *Agrobacterium tumifaciens*
- D. *Escherichia coli*

**Answer:**



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7. The function of polymerase chain reaction (PCR) is:

- A. translation
- B. transduction
- C. DNA amplification
- D. None of these

**Answer:**



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8. Genetically engineered bacterium used in production of :

A. thyroxine

B. human insuline

C. epinephrine

D. cortisol

**Answer:**



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9. Abnormal gene is replaced by normal gene through:

A. gene therapy

B. medicines

C. cloning

D. radiation

**Answer:**



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10. In genetic engineering, the terms vector is applied for :

- A. plasmid
- B. sources of DNA
- C. cell which receives
- D. virus

**Answer:**



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**11. Gene therapy involves:**

A. introducing a normal gene in cell

B. eliminating defective and useless genes

C. treating of defective genes with radiations

D. replacement of defective genes by normal ones

**Answer:**



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12. Which of the following enzyme is used in genetic engineering?

A. Translocase

B. Topoisomerase

C. DNase

D. Restriction endonuclease

**Answer:**



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**13.** The transgenic animals are those which have :

- A. foreign RNA in all its cell
- B. foreign DNA in all its cells
- C. foreign DNA in some of its cells
- D. Both (a) and ©

**Answer:**



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**14.** Known sequence of DNA that is used to find complementary DNA strand is:

A. vector

B. plasmid

C. DNA probe

D. recombinant DNA

**Answer:**



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15. The nuclease enzyme, which begins its attack from free end of a polynucleotide, is:

A. Exonuclease

B. Kinase

C. Polymerase

D. Endonuclease

**Answer:**



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16. Which one of the following bacteria has found extensive use in genetic engineering work in plants?

A. *Agrobacterium tumefaciens*

B. *Clostridium septicum*

C. *Xanthomonas citri*

D. *Bacillus coagulans*

**Answer:**



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17. Improvement fo genotype of an organism by addition of some foreign genes is :

- A. Genetic diversity
- B. Gene handling
- C. Tissue culture
- D. Genetic engineering

**Answer:**



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**18.** The first clone animal of the world is :

A. Molly sheep

B. Polly sheep

C. Dolly sheep

D. Molly goat

**Answer:**



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19. Which of the following is specifically used in genetic engineering ?

A. Ligase

B. Gyrase

C. DNA polymerase

D. Restriction endonuclease

**Answer:**



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20. Molecular scissors, which cut DNA at specific site :

A. ligase

B. cellulase

C. pectinase

D. polymerase

**Answer:**



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21. Plasmids are extrachromosomal circular DNA molecules:

A. which have their own point of replication and can replicate independently

B. Which have their own point of replication but cannot replicate dependently

C. Which do not have their own point of replication and cannot replicate independent of bacterial chromosomal DNA

D. None of the above

**Answer:**



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**22. Identify the plasmid**

A. Alu I

B. Hind III

C. Eco RI

D. pBR 322

**Answer:**



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**23. Natural genetic engineer is :**

A. Bacillus subtilis



B. *Pseudomonas* spp

C. *Escherichia coli*

D. *Agrobacterium tumefaciens*

**Answer:**



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**24.** What does Bt stand for the popular crop Bt cotton ?

A. Best

B. Best type

C. Biotechnology

D. *Bacillus thuringiensis*

**Answer:**



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**25. What is the first step in Southern Blotting technique ?**

- A. Isolation of DNA from a nucleated cell  
such as the one from the scene of crime
- B. Denaturation of DNA on the gel for  
hybridization with specific probe
- C. Production of group of genetically  
identical cells
- D. Digestion of DNA by restriction enzyme

**Answer:**



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**26.** An example of gene therapy is :

A. Production of injectable Hepatitis B

vaccine

B. production of vaccines of food crops like

potatoes which can be eaten.

C. production of test tube babies by

artificial insemination and implantation

of fertilized eggs

D. introduction of gene for adenosine deaminase in persons suffering from Severe Combined Immune Deficiency (SCID)

**Answer:**



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**27.** The enzyme used for cutting DNA segment in genetic engineering is :

A. ATP-ase

B. Liagase

C. DNA polymerase

D. Restriction endonuclease

**Answer:**



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**28.** Widely used tool in genetic engineering of crop plants is :

A. Protoplast fusion

B. Transposon

C. Microinjection

D. Agrobacterium mediation

**Answer:**



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**29.** Which one of the following hydrolyses internal phosphodiester bonds in a polynucleotide chain ?

A. Lipase

B. Protease

C. Exonuclease

D. Endonuclease

**Answer:**



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**30.** There is a restriction endonuclease called EcoRI. What does "co" part in it stand for ?



A. Coli

B. Coelom

C. Coenzyme

D. Colon

**Answer:**



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**31. Agarose extracted from sea weeds finds use**

**in :**

A. Spectrophotometry

B. Tissue culture

C. Gel electrophoresis

D. PCR

**Answer:**



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**32.** Given below is a sample of a portion of DNA strand giving the base sequence on the opposite strands. What is so special shown in it

?

5'-----GAATTC-----5'

3'-----CTTAAG-----5'

- A. Replication completed
- B. Deletion mutation
- C. Start codon at the 5' end
- D. Palindromic sequence of base pairs

**Answer:**



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33. First hormone prepared by genetic engineering is :

A. insulin

B. oxytocin

C. adrenaline

D. somatotropin

**Answer:**



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**34.** First biochemical to be produced commercially by microbial cloning and genetic engineering is :

- A. interferon
- B. penicillin
- C. human insulin
- D. fertility factors

**Answer:**



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**35.** c - DNA probes are copied from the messenger RNA molecules with the help of :

- A. Restriction enzymes
- B. Reverse transcriptase
- C. DNA polymerase
- D. Adenosine deaminase

**Answer:**



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**36.** Electroporation procedure involves :

A. fast pasage of food through sieve pores

in phloem elements with the help of

electric stimulation

B. opening of stomatal pores during night

by artifical light

C. making transient pores in the cell

membrance to introduce gene

constructs

D. purification of saline water with the help  
of a membrane system

**Answer:**



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**37.** A tumour inducing plasmid widely used in  
the production of transgenic plants in that of :

A. *Escherichia coli*

B. *Bacillus thuringiensis*



C. Staphylococcus aureus

D. Agrobacterium tumefaciens

**Answer:**



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**38.** Common bacterium used in genetic engineering is :

A. E.coli

B. Diplococcus

C. Rhizobium

D. Spirillum

**Answer:**



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**39.** What is the function of Restriction endonuclease?

A. Restricts the synthesis of DNA inside the nucleus

B. Synthesizes DNA

C. Cuts the DNA molecule randomly

D. Cuts the DNA molecule at specific sites

**Answer:**



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**40.** The construction of the first recombinant DNA was done by using the native plasmid of :

A. E.coli

B. *Salmonella typhimurium*

C. *B.thuringiensis*

D. yeast

**Answer:**



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**41.** Gel electrophoresis is used for :

A. isolation of DNA molecule

B. cutting of DNA into fragments

C. separation of DNA fragments according to their size

D. construction of recombinant DNA by joining with cloning vectors.

**Answer:**



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**42.** Which one of the following palindromic base sequences in DNA can be easily cut at

about the middle by some particular restriction enzyme ?

A. 5' \_\_\_\_\_ GATATG \_\_\_\_\_ 3'

3' \_\_\_\_\_ CTAATA \_\_\_\_\_ 5'

B. 5' \_\_\_\_\_ GAATTC \_\_\_\_\_ 3'

3' \_\_\_\_\_ CTTAAG \_\_\_\_\_ 5'

C. 5' \_\_\_\_\_ CACGTA \_\_\_\_\_ 3'

3' \_\_\_\_\_ CTCAGT \_\_\_\_\_ 5'

D. 5' \_\_\_\_\_ CGTTCG \_\_\_\_\_ 3'

3' \_\_\_\_\_ ATGGTA \_\_\_\_\_ 5'

**Answer:**



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**43.** An improved variety of transgenic basmati rice :

A. give high yield and is rich in Vitamin A

B. is completely resistance to all insect pests and diseases of paddy

C. give high yield but has no characteristic  
aroma

D. does not require chemical fertilizers and  
growth hormones

**Answer:**



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**44.** PCR and 'Restriction Fragment Length  
Polymorphism are the methods for :



A. Genetic transformation

B. DNA sequencing

C. Genetic fingerprinting

D. Study of enzymes

**Answer:**



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**45.** For transformation, microparticles coated with DNA are to be bombarded with gene gun are made up of :

A. Platinum or Zinc

B. Silicon or Platinum

C. Gold or Tungsten

D. Silver or Platinum

**Answer:**



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**46.** Which vector can clone only a small fragment of DNA ?

A. Bacterial artificial chromosome

B. Yeast artificial chromosome

C. Plasmid

D. Cosmid

**Answer:**



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**47.** In vitro clonal propagation in plants is characterized by:

A. PCR and RAPD

B. Northern blotting

C. Electrophoresis and HPLC

D. Microscopy

**Answer:**



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**48.** What term is used for an extrachromosomal circular DNA in a bacterial cell ?



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**49.** What are the molecular scissors ?



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**50.** What term is used for the DNA sequence from same words when read both forward and backward.



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51. Name the enzyme that joins two strands of DNA.



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52. What type of technique is used for amplification of DNA ?



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**53.** Name the protein that produced in a heterozygous host .



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**54.** What is the first restriction endonuclease ?



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**55.** Which acts as a vector to transfer a piece of DNA ?



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**56.** The DNA digesting enzyme that removes nucleotides from the termini.



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**57.** The enzyme that catalyses the synthesis of RNA on a DNA template.



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58. The fluorescent dye used in agarose gel electrophoresis.

A.

B.

C.

D.

**Answer:**



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**59.** Name the technique used for the separation of DNA fragments.



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**60.** The restriction endonuclease isolated from *Escherichia coli* .



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**61.** Transfer of DNA fragments from the agarose gel to a nylon membrane.



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**62.** The instrument used in PCR amplification.



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**63.** You have chosen a plasmid as vector for cloning your gene. However, this vector

plasmid lacks a selectable marker. How would it affect your experiment?



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**64.** Enzymes that cut the DNA at specific sites are called \_\_\_\_\_.



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**65.** The enzyme required for making genes from the mRNA is called \_\_\_\_\_.



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66. The plasmid of *A. tumefaciens* is called \_\_\_\_\_.



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67. Plants possessing genes of other organisms are called \_\_\_\_\_ plants.



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68. \_\_\_\_\_ are most widely used cloning vectors in genetic engineering.



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69. Short DNA molecules with known base sequences used for recognition of restriction fragments are called \_\_\_\_\_.



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70. As transgenic plants and animals produce various useful substances, they are called living \_\_\_\_\_



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71. Bt gene is transferred to plants from the bacterium \_\_\_\_\_



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72. Seeds which cannot tolerate drying and freezing temperature are called \_\_\_\_\_ seeds.



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73. \_\_\_\_\_ enzymes join the cut ends of DNA.



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74. Institutions for collection and maintenance of germplasm are called \_\_\_\_\_



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75. The word 'biotechnology' was coined by .....



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**76.** Class II restriction endonucleases (enzymes) recognise specific nucleotide sequence in DNA called .....



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**77.** Cohesive ends in the DNA fragments are generated by ..... cutting.



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**78.** The anionic detergent, used in polyacrylamide gel electrophoresis is known as

..... .



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**79.** The blotting of protein molecules to a nylon membrane is known as



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**80.** Fill in the blanks with correct answer(s)/

Correct the underlined portion of the sentences.

The process of uptake of plasmid DNA is called bombardment.



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**81.** The delivery of a foreign DNA fragment into the fertilised egg with a micropipette is known as .....





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**82.** The conjoint structure formed by the joining of the vector DNA and the target DNA fragment is known as .....



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**83.** Detection of a desired DNA fragment by using radioactive emission is known as



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**84.** The enzyme reverse transcriptase is used to obtain recombinant DNA.



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**85.** *Bacillus subtilis* is a natural genetic engineer.



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**86.** In the crop Bt cotton, Bt stands for Biotechnology.



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**87.** pBR322 is a/an endonuclease.



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**88.** The enzyme that used for cutting DNA IS DNA polymerase.



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**89.** Eco RI is a coenzyme.



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**90.** Oxytocin is the first hormone prepared by genetic engineering.



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**91.** Polymerase chain reaction was discovered by



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**92.** DNA ligase is commonly known as



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**93.** DNA fragments move towards anode during Denaturation.



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**94.** Amplification of DNA by PCR uses a DNA polymerase called



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**95.** Enzyme ligase is used to for  $\pi - \pi$  bond in DNA.



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**96.** What is polymerase chain reaction



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**97.** Define gene cloning.



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**98.** What is a palindrome? Give an example .



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**99.** What is a recombinant DNA?



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**100.** What is Southern blotting?



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**101.** Why is DNA ligase called molecular glue?



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**102.** Explain electrophoresis.



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**103.** What is a restriction endonuclease (restriction enzyme)? Why is the word restriction used to designate these?



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**104.** What is autoradiography?





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**105.** What is an electroportion ?



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**106.** What does 'H', 'd' and 'III' refer to in the enzyme Hind III?



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**107.** Write a short note on *Bacillus thuringiensis* (Bt).



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**108.** Differentiate between the Plasmid and Chromosomal DNA.



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**109.** Differentiate between: Exonuclease and Endonuclease.



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**110.** Describe recombinant DNA technology



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**111.** Write short note on Bt crops.



**Watch Video Solution**



**112.** Write Short notes on Recombinant DNA technology



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**113.** Write Short notes on Genetic engineering



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