

BIOLOGY

BOOKS - SARAS PUBLICATION

Principles And Processes of Biotechnology.

Exercise

1. Restriction enzymes are

- A. Not always required in genetic engineering
- B. Essentials tools in genetic engineering
- C. Nucleases that cleave DNA at specific sites
- D. Both b and c



- 2. Plasmids are
 - A. Circular protein molecules
 - B. Required by bacteria
 - C. Tiny bacteria
 - D. Confer resistance to antibiotics



3. EcoRI cleaves DNA at

- A. AGGGTT
- **B. GTATATC**
- C. GAATTC
- D. TATAGC

Answer:



4. Genetic engineering is

A. Making artificial genes

B. Hybridization of DNA of one organism to that of the others

C. Production of alcohol by using microorganisms

D. Making artificial limbs, diagnostic instruments such as ECG, EEG etc.

Answer:

- 5. Consider the following statements:
- i. Recombinant DNA technology is popularly known as genetic engineering is a stream of biotechnology which deals with the manipulation of genetic materials by man invitro
- ii. pBR322 is the first artificial cloning vector developed in 1977 by Boliver and Rodriguez from E.coli plasmid.
- iii. Restriction enzymes belong to a class of

enzymes called nucleases . Choose that correct option regarding above statements

- A. I & II
- **B. I & III**
- C. II & III
- D. I, II & III

Answer:



- **6.** The process of recombinant DNA technology has the following steps
- I. Amplification of the gene .
- II. Insertion of recombinant DNA in to the host cells .
- III. Cutting of DNA at specific location using restriction enzyme.

IV . Isolation of genetic meterial (DNA) Pick out the correct sequence of step for recombinant DNA technology .

A. II, III, IV, I

- B. IV, III, I, II
- C. IV, II, III, I
- D. IV, III, II, I



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7. Which one of the following palindromic base sequence in DNA can be easily cut at about the middle by some particular restriction enzymes?

- A. 5' CGTTCG 3' 3' ATCGTA 5'
- B. 5' GATATG 3' 3'CTACTA 5'
- C. 5' GAATTC 3' 3'CTTAAG 5'
- D. 5' CACGTA 3' 3' CTCAGT 5'



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8. pBR 322, BR stands for

A. Plasmid Bacterial Recombination

- B. Plasmid Bacterial Replication
- C. Plasmid Boliver and Rodriguez
- D. Plasmid Baltimore and Rodriguez



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9. Which one of the following is used as

Biosensors?

A. Electrophoresis

- B. Bioreactors
- C. Vectors
- D. Electroporation



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10. In which techniques Ethidium Bromide is used?

A. Southern Blotting techniques

- B. Western Blotting techniques
- C. Polymerase Chain Reaction
- D. Agarose Gel Electrophoresis



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11. Assertion: Agrobacterium tumifaciens is popular in genetic engineering because this bacteriusim associated with the root nodules of all cereals and pulse crops.

reason: a gene incorporated in the bacterial chromosomal genome gets automatically transferred to the cross with which bacterium is associated.

A. Both assertion and reason are true. But reason is correct explanation of assertion.

B. Assertion is true, but reason is false.

C. Assertion is false, but reason is ture.

D. Both assertion and reason are false.



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12. Which one of the following is not correct statement.

A. Ti plasmid causes the bunchy top

B. Multiple cloning site is known as

Polylinker

- C. Non viral method transfection of Nucleic acid in cell.
- D. Polylactic acid is a kind of biodegradable and bioactive thermoplastic.



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13. An anylysis of chromosomal DNA using the southern hybridisation technique does not use

- A. Electrophoresis
- B. Blotting
- C. Autoradiograhy
- D. Polymerase Chain Reaction



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14. An antibiotic gene in a vector usually helps in the selection of

- A. Competent cells
- B. Transformed cells
- C. Recombinant cells
- D. b and c



- 15. Some of the charcteristics of Bt cotton are
 - A. Long fibre and resistant to aphids

- B. Medium yield, long fibre and resistant to beetle pests
- C. High yield and production of toXIIc protein crystals which kill diptreran pests.
- D. High yield and resistant to ball wroms



16. What are the materials used to grow microorganism like Spirulina?



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17. What are the enzymes you can used to cut terminal end and internal phospho di ester bond of nucleotide sequence?



18.	The	term	biotechnology	was	coined	by	
	A. Louis Pasteur						
	B. Karl Ereky						
	C. Operon						
	D. Alv	win					
Answer:							
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19. Which of the following is wrongly matched?

A. Immunology-Study of body's defence mechanism

B. Microbiology-Study of microbes

C. Biochemistry-Study of chemicals

D. Biophysics-Application of physical principles and methods to biological problems

Answer:



20. Which of the following is correctly matched?

A. 1940-Basis of alcoholic fermentation

B. 1919-First viral vaccine

C. 1928-Human genome project

D. 2001-First plant genome

Answer:



21. Penicillin was discovered by.

- A. Sir Robert
- B. Watson and Crick
- C. Herbert Boyer
- D. Alexander Fleming

Answer:



- **22.** Which of the following is wrongly matched?
 - A. One gene one enzyme-George Beadle and Edward
 - B. DNA as the genetic material Avery,

 Macleod, McCarty
 - C. Double helix structure of DNA-Snager and Gilbert

D. Restriction enzyme-Arber, Smith and

Nathans

Answer:



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23. Which of the following is created by human genome project in 2001?

A. Biolistic transformation

B. Draft of the human genome sequence

- C. Insulin production
- D. Artificial gene



- **24.** First crop plant genome sequenced is.
 - A. Pisum sativum
 - B. Hibiscus
 - C. Oryza sativa

D. Arabidopsis thaliana

Answer:



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25. First plant genome sequenced is.

- A. Oryza sativa
- B. Agaricus
- C. Chlamydomonas
- D. Arabidopsis thaliana



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26. Human genome project was completed in the year.

A. 2001

B. 2002

C. 2003

D. 2004



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27. Which of the following is correctly matched?

- A. Stem cell therapy-2016
- B. Blood stem cells grown in lab-2017
- C. First plant genome-2000
- D. In vitro fertilization in animal-2018



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28. The study of fermentation and its practical uses is called.

- A. Zymology
- B. Fermentology
- C. Mycology
- D. Phycology



- **29.** Which of the following is correctly matched?
 - A. Ligase-Molecular scissor
 - B. thermus aquaticus-Bt gene
 - C. Agrobacterium tumefaciens-Tumour
 - D. Hind II-Plasmid vector



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30. The enzyme used to join the DNA fragments is

- A. DNA polymerase
- **B.** Primase
- C. Ligase
- D. Endonuclease



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31. Assertion: The rDNA technique involves the transfer of DNA coding for a specific gene from one organism into another using vectors.

Reason: In the direct gene transfer methods the foreign gene of interest is delivered into the host plant without the help of a water.

A. Both assertion and reason are true. But reason is correct explanation of assertion.

B. Both assertion and reason are true. But reason is not correct explanation of assertion.

C. Assertion is false, but reason is ture.

D. Assertion is false, but reason is true.

Answer:



32. Match the following restriction enzymes with their microbial source

i. Alu I - A. Haemophilus
aegyptus
ii. Bam HI - B. Arthrobacter
luteus
iii. Hae III - C. Haemophilus
influenzae
iv. Hind III - D. Bacillus
amyloliquefaciens

A. i-D, ii-C, iii-A, iv-B

B. i-B, ii-D, iii-A, iv-C

C. i-C, ii-A, iii-B, iv-D

D. i-B, ii-C, iii-A, iv-D

Answer:



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33. Which of the following enzyme prevents self ligation?

- A. Endonuclease
- B. DNA ligase
- C. Alkaline phosphate

D. DNA synthase

Answer:



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34. In bacteria, genes for antibiotic resistance are located in.

- A. Plasmid
- B. Cytoplasm
- C. Nucleus

D. Mitochondria

Answer:



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35. Plasmid is also called.

A. Genetic marker

B. Cloning vehicle

C. Cloning marker

D. Cloning site



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36. The most popular and widely used plasmid vector is.

- A. pBR 322
- B. Ti plasmid
- C. YAC vector
- D. Shuttle vector



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37. Cosmid is a plasmid with.

A. M13 DNA and cos site

B. Lambda phage DNA and cos site

C. Yeast DNA and cos site

D. Phage DNA and cos site

Answer:

38. Vectors designed to replicate in cells of two different species are called.

A. Phasmids

B. Cosmids

C. Phagemid vectors

D. Shuttle vector

Answer:



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39. Which of the following bacterium is considered as 'natural genetic engineer'?

A. Agrobacterium tumefaciens

B. Agrobacterium radiobacter

C. Escherichia coli

D. Thermus aquaticus

Answer:



40. Western blotting is the technique for the detection of.

- A. DNA in a sample
- B. RNA in a sample
- C. Protein in a sample
- D. Lipid in a sample

Answer:



41. Amino benzyloxymethyl filter paper is used for.

A. Southern blotting

B. Northern blotting

C. Western blotting

D. Southern north blotting

Answer:



42. Which of the following gel electrophoresis is preferred for the purification of smaller DNA fragments?

- A. Agarose
- B. Agrobacterium radiobacter
- C. Ethidium bromide
- D. Agar agar

Answer:



43. Agarose gel electrophoresis separates DNA molecules of size.

- A. 10-20 bp
- B. 20-30 bp
- C. 100-20000 bp
- D. 100-200 bp

Answer:



44. In electrophoresis DNA will migrate towards.

- A. Anode
- B. Cathode
- C. Negative electrode
- D. None of the above

Answer:



45. Particle gun is also known as.
A. Genetic gun
B. Gene gun
C. DNA gun
D. RNA gun
Answer:
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46. Blue-white screening is used.

- A. To detect gene mutation
- B. To secreen recombinant plasmid
- C. To detect host DNA
- D. To screen chromosomal DNA



- **47.** Which enzyme is encoded by lac Z?
 - A. Beta galactosidase

- B. Lactase
- C. Amylase
- D. Nuclease



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48. 5-Bromo-4indolu- β -D-galactopyranoside is called

A. X-gla

- B. Y-gal
- C. Z-gal
- D. XY-gal



- **49.** Which of the following is wrongly matched.
 - A. 1978-Human insulin
 - B. 1979-Artificial gene

- C. 1983-Use of Ti plasmids
- D. 1987-First plant genome



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50. The first monoclonal antibody was produced by.

- A. Watson and Crick
- B. Kohler and Milstein

- C. Robert and Herbert
- D. Geogre and Edward



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51. When was biolistic transformation first developed?

- A. 1987
- B. 1988

C. 1989

D. 1990

Answer:



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52. The first genetically modified food is.

A. Golden rice

B. Bt potato

C. Flavr Savr tomato

D. Golden wheat

Answer:



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53. The first transgenic sheep is.

A. Billy

B. Lamberi

C. Dolly

D. Glory



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54. PCR was developed by.

A. Sir Robert G. Edward

B. Kary Mullis

C. Arber

D. Sanger

Answer:

55. Sir Rober G. Edwards developed.

A. In vitro fertilization in animal

B. In viov fertilization in animal

C. In vitro fertilization in plant

D. In vivo fertilization in plant

Answer:



56. James Allison and Tasuku Honjo discovered

a

A. Enzyme found in immune cells

B. Lipid found in immune cells

C. Protein found in immune cells

D. Minerals found in immune cells

Answer:



57. Match the following and select the correct sequence.

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i. 1973 - A. US approved humulin
ii. 1976 - B. First yeast chromo-
some sequenced
iii. 1982 - C. rDNA technology
iv. 1992 - D. DNA sequence
techniques
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- A. i-C, ii-D, iii-A, iv-B
- B. i-D, ii-A, iii-C, iv-B
- C. i-B, ii-C, iii-A, iv-D
- D. i-C, ii-D, iii-B, iv-A



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58. What protein is associated with CRISPR genome editing?

- A. Cas 3
- B. Cas 9
- C. Cpr 3
- D. Cpr 9



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59. DMH-11 is.

- A. Transgenic brinjal
- B. Transgenic rice
- C. Transgenic tomato
- D. Transgenic mustard

Answer:

60. A precursor of vitamin A is.

A. Alpha-carotene

B. Beta-carotene

C. Gamma-carotene

D. None of the above

Answer:



61.	Trade	name o	fg	lyphosate	herbici	ide is.	•
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A. Basta

B. Monsanta

C. Round up

D. Psy

Answer:



62. Glyphosate herbicide is produced by the USA company.

- A. Monsanto
- B. Medicago
- C. Trademark office
- D. MNC

Answer:



63. PPT gene was isolated from.

A. Streptomyces hygroscopicus

B. Medicago sativa

C. Bacillus thuringienis

D. Erwinia auredorora

Answer:



64. Bt brinjal is created by inserting a crystal protein gene called.

- A. Cry
- B. Cry 1 Ac
- C. Cry 1 AD
- D. Cry AB

Answer:



65. Psy gene is obtained from the plant.

A. Narcissus pseudonarcissus

B. Oryza sativa

C. Bacillus thuringienis

D. Erwinia auredorora

Answer:





1. Name the chemicals used in gene transfer.



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2. You are working in a biotechnology lab with a bacterium namely E.coil. How will you cut the nucleotide sequence? Explain it.



3. Compare the various types of blotting techniques.



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4. Write the advantages and disadvantages of Bt cotton.



5. Write the benefits and risk of Genetically Modified Foods .



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6. What do you know about the word pBR332?



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7. Is their any possibilities to tranfer a suitable desirable gene to host plant without vector?

Justify you answer. **Watch Video Solution** 8. How do you use the biotechnology in modern practice? **Watch Video Solution 9.** Mention the application of biotechnology. **Watch Video Solution**

10. What are restrictions enzyme. Mention their type with role in biotechnology.



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11. How will you identify a vector?



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12. What is bioremediation?

Give some exapmles of bioremediation.

- 13. Crt-I gene is obtained from.
 - A. Narcissus pseudonarcissus
 - B. Erwinia auredorora
 - C. Pseudomonas
 - D. Alcaligenes eutrophus

Answer:



14. Chemical basis of alcoholic fermentation was given by.

A. Edward Jenner

B. Ernst Hoppe

C. Lavoisier

D. Louis Pasteur

Answer:



15. Define zymology.
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16. What is bioreactor?
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17. Define upstream process.
Watch Video Solution

18. Define downstream process	
Watch Video Solution	

19. What are primary metabolites?



20. What are secondary metabolites?



21. What are restriction enzymes or molecular scissors?



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22. What is symmetric cuts?



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23. What are DNA ligases?



24. What is the role of alkaline phosphatase in genetic engineering?



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25. What is vector?



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26. Define origin replication.



27. What is selectable marker?

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28. What are transposons?



29. What are walking genes?



30. Write notes on expression vectors.



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31. Cosmid is



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32. What is competent host?



33. What is chemical mediated gene transfer?



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34. What is micro injection?



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35. Define electroporation method of gene transfer.



36. Explain the liposome mediated method of gene transfer?



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37. Write a brief note on Biolistics.



38. Write notes on antibiotic resistance marker.



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39. Define Electrophoresis



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40. Define blotting technique.



41. Explain Southern blotting techniques .



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42. What is Northern blotting?



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43. What is RNA interference?



44. What is Bt brinjal?



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45. What is DMH?



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46. Find out from internet what is golden rice.



47. What is PLA? Watch Video Solution 48. What is GFP? Watch Video Solution 49. Define endonucleases.

50. Define genome.



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51. Define phagemid.



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52. What is restriction map?



53. Define shuttle vector.



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54. What is Taq polymerase?



Watch Video Solution

55. Define bioleaching.



56. What is Phytoremediation?



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57. What is biotechnology?



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58. Write a short note on convertional biotechnology.



59. What are the two main features of modern biotechnology?



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60. Define Genetics.



61. Define molecular biology.



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62. Briefly describe the following: a.

Transcription b. Polymorphism c. Translation d.

Bioinformatics



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63. Define biophysics.



64. What is fermentation?



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65. Define single cell protein.



66. List out the microorganisms used for the production of single cell protein.



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67. What is meant by recombinant DNA technology?



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68. What is PCR?



69. Name the basic tools used for genetic engineering.



70. How are endonulceases named?



71. What are the features that are required to faciliate cloning into a vector?



72. Name some vectors used in biotechnology.



73. What is direct gene transfer?



74. What is indirect gene transfer?



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75. What is screeing of combinations?



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76. What does ELISA stands for?



77. What are DNA probes?



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78. Define Transfection.



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79. What is meant by genome sequencing?



80. What is CRISPR - Cas 9?



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81. Transcription



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82. What are bio degradable polymers? Give examples.



83. What are the advantages of PHA.



84. List out the microorganisms utilized to produce different types of PHA.



85. What is polyactic acid?



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86. List out the resources of polylactic acid.



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87. What is GFP?



88. Define Biopharming . Give its uses .



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89. Write a note on bioprospecting .



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90. Define biopiracy? Give its examples.



91. Name some antibiotics and their sources.

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92. Give examples of secondary metabolites in plants.



93. What are primary metabolites ? Give example.



94. What are palindromic repeats?



95. What is a plasmid?



96. Define blotting technique.



97. What is the aim for the production of golden rice?



98. How is the process of fermentation valuable to the food and beverage industry.



99. Name any two Bt crops.



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100. Agrobacterium tumefaciens is a good vector in gene tranfer. State the reason for it.



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101. Molecular farming plants are different from natural medicinal plants. How?





102. Write the principle of electrophoresis.



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103. What is electroporation?



104. Describe the major focus of biotechnology.



105. Write notes on bioreactor.



106. Write about the process of fermentation



107. Write about the process of fermentation



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108. What do astronauts eat in space for instant energy? Describe that food.



109. Enumerate the applications of single-cell protein .



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110. Differentiate Symmetric and Asymmetric cuts of restriction enxymes .



111. Name the enzyme which is isolated from T_4 phage and describe it.



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112. Name the enzyme which is extracted from calf intestine and describe it.



113. What are the main features that are required to facilitate cloning into a vector?



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114. Name and explain the plasmid which is found in Agrobacterium tumefaciens.



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115. What are walking genes?



116. Write notes on expression vectors.



117. What is cosmid.



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118. Write notes on bacteriophage vectors.



119. Write notes on phagemid vectors.



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120. Describe bacterial artificial chromosome vector.



121. Write notes on YAC vector.



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122. Define shuttle vector.



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123. Why is E.coli preferred as a host for cloning?



124. How can you prepare a competent host?



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125. Write notes on electrophoresis.



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126. Define blotting technique.



127. Name and describe the blotting technique which is used to separate the RNA molecule .



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128. Name and describe the blotting technique which is used to separate the RNA molecule.



129. What does target gene mean? How is it related to gene knockout?



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130. Describe the types of target vectors.



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131. Comment on plant genome project.



132. What is borcode in genetics?



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133. What is genome editing?



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134. Write notes on CRISPR-Cas 9.



135. List out the changes which take place during gene expression.



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136. Write notes on glyphosate.



137. Write the protocol for glyphosate toleranrt potato plant.



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138. Write notes on herbicide tolerant Basta.



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139. 'Bt Cotton"



140. 'Bt brinjal"



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141. What does Bt mean in biotechnology?

How Bt toXIIn kills insects?



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142. Write notes on DMH-11.



143. What is Flavr Savr tomato? Write the advantages of Flavr Savr tomato.



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144. Write notes on golden rice.



145. What is green fluorescent protein?



146. Draw a protocol for the preparation of green fluorescent protein.



147. Write notes on bioremediation.



148. Write the limitations of bioremediation.



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149. What is the best alternative to fossil fuels? Write short note about this alternative source of fuel.



150. Explain the method of hydrogen production by algae.



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151. Write notes on biopiracy of neem.



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152. Describe the biopiracy of turmeric.



153. Write notes on biopiracy of Basmati.



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154. Explain the types of restriction enzymes.



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155. What is direct gene transfer method? List the methods.



156. What is chemical mediated gene transfer?



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157. Describe microinjection method of gene transfer.



158. Arrange the following in the correct sequence.



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159. What are the step involved in recombinant DNA rechnology?



160. Define electroporation method of gene transfer.



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161. Explain the liposome mediated method of gene transfer?



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162. Describe biolistics.



163. What is indirect gene transfer?



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164. Explain the blue-white colony selection method.



165. Explain the replica plating technique.



166. Write notes on agarose gel electrophoresis.



167. Name and describe the blotting technique which is used to separate the RNA molecule .



168. What is RNA interference?



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169. Write notes on antibiotic resistance marker.

