



BIOLOGY

BOOKS - SURA BIOLOGY (TAMIL ENGLISH)

PRINCIPLES AND PROCESSES OF BIOTECHNOLOGY

Evaluation

1. Restriction enzymes are

engineering

B. Essential tools in genetic engineering

C. Nucleases that cleave DNA at specific

sites

D. both b and c

Answer: D

2. Plasmids are

A. circular protine molecules

B. require by bacteria

C. tiny bacteria

D. confer resistance to antibiotics

Answer: D

3. EcoRI cleaves DNA at

A. AGGGTT

B. GTATATC

C. GAATTC

D. TATAGC

Answer: C



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 micro

organism

D. making artificial limbs, diagnostic

instruments such as ECG, EEG etc.

Answer: B



5. 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,II,III,I

C. I,II,III,IV

D. IV,III,I,II

Answer: D

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6. 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'

Answer: C

7. pBR 322, BR stands for

A. Plasmid Bacterial Recombination

B. Plasmid Bacterial Replication

C. plasmid Boliver and Rodriguez

D. plasmid Baltimore and Rodriguez

Answer: C

8. Which one of the following is used as Biosensors ?

A. Electrophoresis

B. Bioreactors

C. Vectors

D. Electroportion

Answer:

9. In which techniques Ethidium Bromide is used?

A. Southern Blotting techniques

B. Western Blotting techniques

C. Polymerase Chain Reaction

D. Agrose Gel Electroprosis

Answer: D

10. 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. Both assertion and reason are true. But

reason is not correct explanation of

assertion

C. Assertion is true but reason is false

D. both assertion and reason are false

Answer: D

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

A. Ti plasmid causes the bunchy top disease.

B. Multiple cloning sites known as

polylinker

C. Non viral method transfection of Nucleic

acid in cell

D. Polylactic acid is a kind of biodegradable

and bioactive thermoplastic

Answer: A

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12. An anylysis of chromosomal DNA using the

southern hybridisation technique does not

use

A. Electrophoresis

B. Blotting

C. Autoradiography

D. Polymerase Chain Reaction

Answer: D

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13. An antibiotic gene in a vector usually helps

in the selection of

A. Component cells

B. Transformed cells

C. Recombinant cells

D. None of the above

Answer: B

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14. Some of the charcteristics of Bt cotton are

A. Long fibre and resistant to aphids

B. Medium yield, long fibre and resistant to

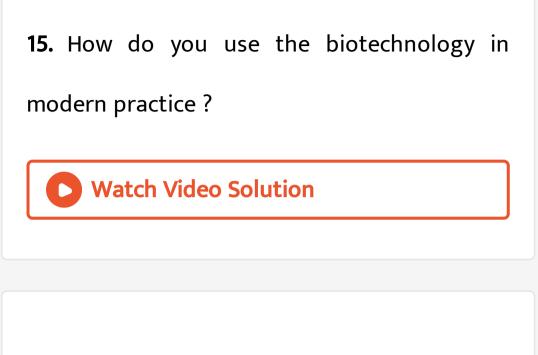
beetle pests

C. high yield and production of toxic

protine crystals which kill dipteran pests

D. High yield and resitant to ball worms

Answer: D



16. What are the materials used to grow

microorganism like Spirulina?

17. You are working in a biotechnology lab with

a bacterium namely E.coil. How will you cut the

nucleotide sequence? Explain it.

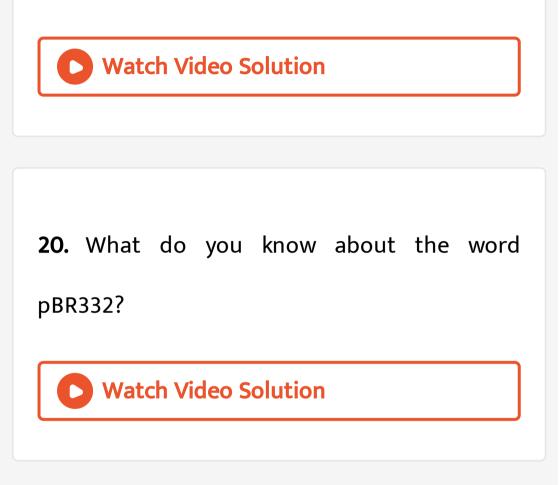


18. What are the enzymes you can used to cut

terminal end and internal phospho di ester

bond of nucleotide sequence?

19. Name the chemicals used in gene transfer.



21. Mention the application of biotechnology.

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

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23. Is their any possibilities to tranfer a suitable desirable gene to host plant without

vector? Justify you answer.

24. How will you identify a vector ?

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25. Compare the various types of blotting techniques.

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26. Write the advantages of herbiced tolerant

crops.



27. Write the advantages and disadvantages of

Bt cotton.



28. What is bioremediation?

Give some exapmles of bioremediation.

29. Write the benefits and risk of Genetically

Modified Foods .

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Additional Questions And Answers I Choose The Correct Answer

1. convertional biotechnology is also known as

A. Modern biotechnology

B. Traditionnal biotechnology

C. Old bioteachnology

D. Kitchen biotechonolgy

Answer: B

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2. who discovered the double helix structure

of DNA ?

A. Sanger and Gilbert

B. Karl Ereky

- C. Watson and Crick
- D. Smith and Nathans

Answer: C



- 3. who disovered restriction enzymes ?
 - A. Watson and Crick
 - B. Avery-MacLeod-Mc Carty
 - C. Sanger and Gilbert

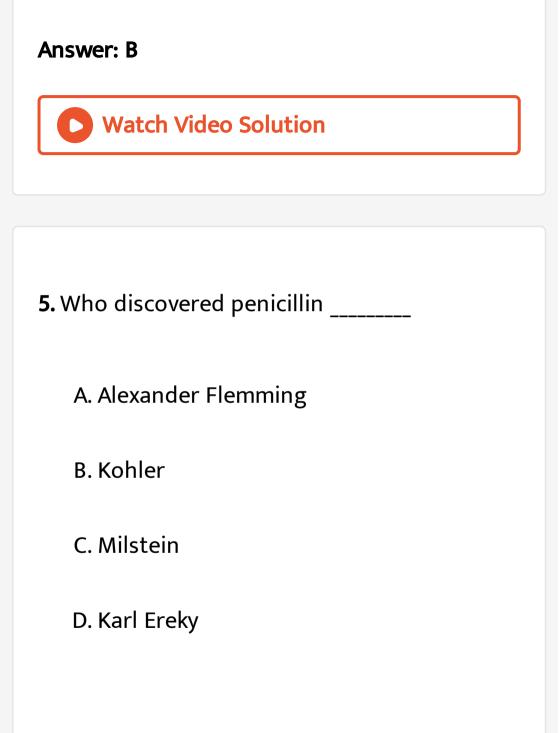
D. Arber, Smith and Nathans

Answer: D

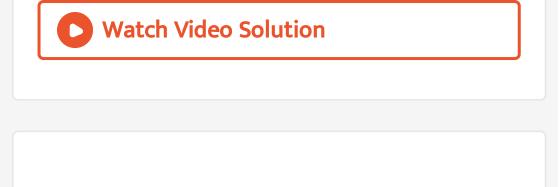
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4. Production of monoclonal antibondies by

- A. Sanger and Gilbert
- B. Kohler and Milstein
- C. Waston and Crick
- D. Karl Ereky



Answer: A



6. The term biotechnology was coined by

A. Gottlieb

B. W . Bateson

C. Karly Ereky

D. Erich

Answer: C





7. _____ is a technique used to make million

copies perticular region of DNA

A. PCR

B. Biotechology

C. Genetic engineering

D. Electrophoresis

Answer: A

8. _____ joins the surger and phosphate molecular of double stranded DNA

A. Alkaline phosphate

B. DNA ligase

C. Endonuclease

D. Exonuclease

Answer: B

9. _____ used as biofertiliser and nitrogen

fixers .

A. Enzymes

B. Biomass

C. Microbial inoculants

D. Biofuels

Answer: C

10. _____ developed techniques to sequence

DNA.

A. Sanger and Gilbert

B. Karl Ereky

C. Waston and Crick

D. Smith and Nathans

Answer: A

11._____ is a reconstructed plasmed .

A. PBR 322 plasmid

B. Ti plasmid

C. Vectors

D. Jumping plasmid

Answer: A

12. Binomial name of deffodil

A. Erwinia aureorara

B. Narcissus pseudonarcissus

C. Oryza sative

D. Alcaligenes eutrophus

Answer: B

13. _____ used to produce algal biofuel

A. Chlamydomonas reinhardii

B. Batryococcus braunii

C. Aequorea victoria

D. Alcaligenes eutrophus

Answer: B

14. Only type _____ restriction enzymes is preferred for use in recombinant DNA technology.

A. I

B. II

C. III

D. (a) and (c)

Answer: B

15. DNA ligase is isolated from _____

A. E-coli

B. TMV

C. T_4 phage

D. Agrobacterium

Answer: C

16. Pick the characteristic of a vector which is

not true

A. Small size

B. Suitable markar

C. Origin of replication

D. One restriction site only

Answer: D

17. T_1 plasmid does have this gene.

A. One

B.tra

C. ori

D. inc

Answer: C



18. In blue white colony selection method cells with non recombinant DNA develop _____ colonies .

A. Blue

B. White

C. Bule with patches of white

D. Colourless

Answer: A

19. Dicer and Drosha are _____

A. plasmid

B. rDNA

C. enzyme

D. transgenic plants

Answer: C

20. Glutamine synthese is involved in _____

A. Protein digestion

B. Ammonia assimilation

C. High yield

D. Tolerant to tumour

Answer: B

21. The cry toxin affects _____ system of

insect pests

A. respiratory

B. digestive

C. circulatory

D. immune

Answer: B

22. Flaver Savr tomato was created to ____

A. increase vitamin content

B. increase yield

C. increase shelf life

D. make tomatoes look brighter

Answer: C

23. Proces that increases oxygen flow to accelerate the degradation of environmental pollutants is

A. Mycoremdiation

B. Bioventing

C. Phytoremediation

D. Rhizofiltration

Answer: B

- 1. 'Modern Biotechnology''
- (I) Ability to change the genetic meterial for getting new products .
- (II) Owership of the newly developed technolgy

- (III) Making of wine.
- (IV) making of wine.
- Used for preperation of idli and dosa .

A. I and II only

B. II and III only

C. III and IV only

D. I and IV only

Answer: A

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- 2. 'Fermentation"
- (I) It is metablic process .

(II)) Convert organic molecules into acids, gases or alcohol.

(III) Zymology is the study of fermentation.

(IV) Fermentation occur in certain types of becteria.

A. I and II only

B. II and III only

C. I, II, III and IV

D. I and IV only

Answer: C

3. 'Polyhydroxy butyrate''

(I) It is a group of degradable bio-polymers.

(II) It is eco-friendly bio-polymers.

(III) Has medical applications such as drug delivery and heart valves .

(IV) It is very toxic and pollute the environment.

A. I and II only

B. I, II and III only

C. I, II, III and IV

D. I and IV only

Answer: B



- **4.** 'Agarose GEL electrophoresis''
- (I) Agarose gel Electrophoresis used mainly for
- the purification of specific DNA fragments .
- (II) Polyacrylamide is prefered for the purification of smaller DNA fragments .
- (III) Agarose is convenient for separating RNA fragments

(IV) The gel is complex network of polymeric molecules .

A. I and II only

B. I, II and III only

C. I, II, III and IV

D. I and IV only

Answer: B

- 1. 'Bt Cotton"
 - A. Bt cotton is a genetically modified organism
 - B. Bt toxins are insecticidel to the larvae of moths .
 - C. Increase pollination by insects
 - D. Cost of Bt cotton seed is high

Answer: C



- 2. 'Bt brinjal''
 - A. It is a transgenic brinjal
 - B. Created by inserting Cry 1 Ac.
 - C. Developed to give resistance against

Lipidopteron insects.

D. Ineffective against sucking pests .

Answer: D



3. 'PLA''

- A. Poly lactic acid is a biodegradable .
- B. It is a bioactive thermoplastic
- C. It is aliphatic polyester derived from

corn starch

D. It is synthetic polymers





Additional Questions And Answers V Assertion And Reason

1. What is gene therapy ? Illustrate using the example of adenosine deaminase (ADA) deficiency.

A. gene therapy

B. chemotherapy

C. immunotherapy

D. radiation therapy

Answer: A

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2. Assertion (A) : Endonuclease catalyeses the cleavage of DNA at internal position .
Reason (R) : Endonulease is an enzyme produced by bacteria .

A. Both Assertion and Reason are true and

Reason is correct explanation of Assertion .

- B. Both Assertion and Reason are true and Reason is not correct explanation of Assertion .
- C. Both Assertion and Reason are true .
- D. Both Assertion and Reason are false .

Answer: B

3. Assertion (A) : Single cell protein from spirulina is utilized in food industries .
Reason (R) : Single-cell proteins can cause allergy .

A. Both Assertion and Reason are true and Reason is correct explanation of Assertion .

B. Both Assertion and Reason are true and

Reason is not correct explanation of

Assertion .

C. Both Assertion and Reason are true.

D. Both Assertion and Reason are false .

Answer: B

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4. Assertion (A) : Primary metabolites produced for the maintenance of life process of microbes .

Reason (R) : Secondary matabolites are not

produced by plants .

A. Both Assertion and Reason are true and

Reason is correct explanation of Assertion .

B. Both Assertion and Reason are true and Reason is not correct explanation of Assertion .

C. Assertion is true and Reason is false.

D. Both Assertion and Reason are false .

Answer: C



5. Assertion (A) : Bt cotton is genetically modified cotton with an insecticide activity against bollworm.

Reason (R) : Yield of cotton is increased due to

effective control of bollworms

A. Both Assertion and Reason are true and

Reason is correct explanation of

Assertion .

B. Both Assertion and Reason are true and

Reason is not correct explanation of

Assertion .

C. Both Assertion and Reason are true.

D. Both Assertion and Reason are false .

Answer: A

- **1.** Choose the correct pair
 - A. Taq polymerase Thermus aquaticus
 - B. Single cell protein Human isulin
 - C. Spirulina E-coli
 - D. Hydrogenase Rhizo filtration

Answer: A



A. Biopharming - Fermantation

B. Jelly fish - GFP

C. Molecular Pharming - Increases oxygen

D. Bioventing - Decreases oxygen

Answer: B

A. Vitamin A- Dioxin

B. Lycopene cyclase - Phytoene sysnthese

C. Vitamin C - Normal rice

D. Beta-Carotene - Golden-rice

Answer: D

A. Ethanol - Secondary metabolite

B. Tetracycline - Streptomyces griseus

C. Lactic acid- Primary matabolite

D. Penicillin - Streptomyces nodosus

Answer: C

A. Golden rice - Oryza Sative

B. Polyhydroxy butyrate - Degradable

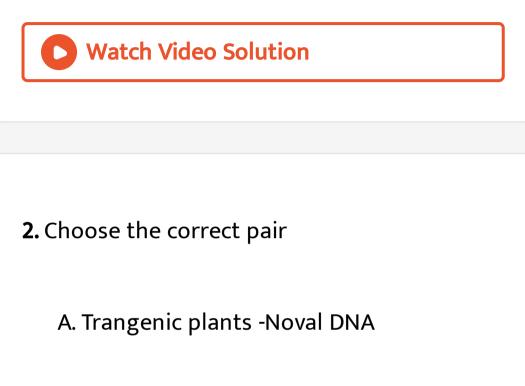
bipolymer

C. Polylactic acid - Non-degradable

D. Green fluroscent Protein - Aequorea

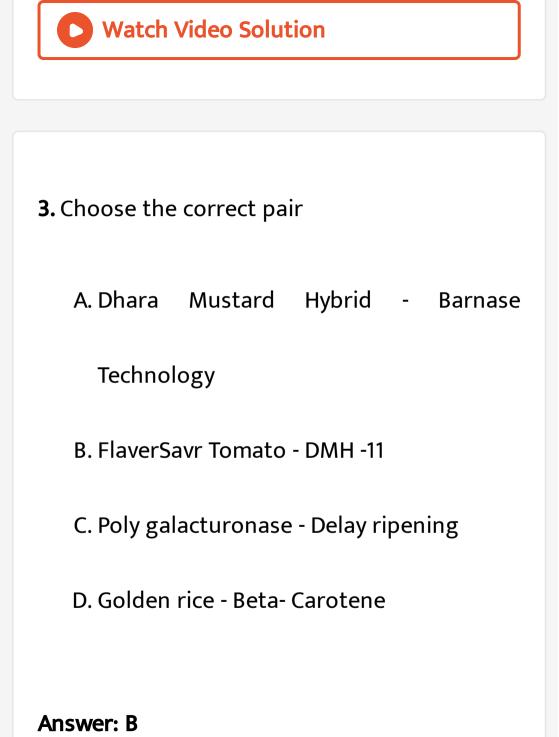
Victoria





- B. Glyphostate herbicide Potato plant
- C. Bar gene Strptomyces
- D. Bt cottion Medicago Sative

Answer: D







A. Indirect Gene Transfer - Vector mediated

gene transfer

B. Direct Gene Transfer - Vectorless gene

Transfer

C. Biolistics - Tungsten particles

D. Gene Transfer - Replica plating





Additional Questions And Answers Answer In One Word

1. Origin of the word fermentation ____

fervere.

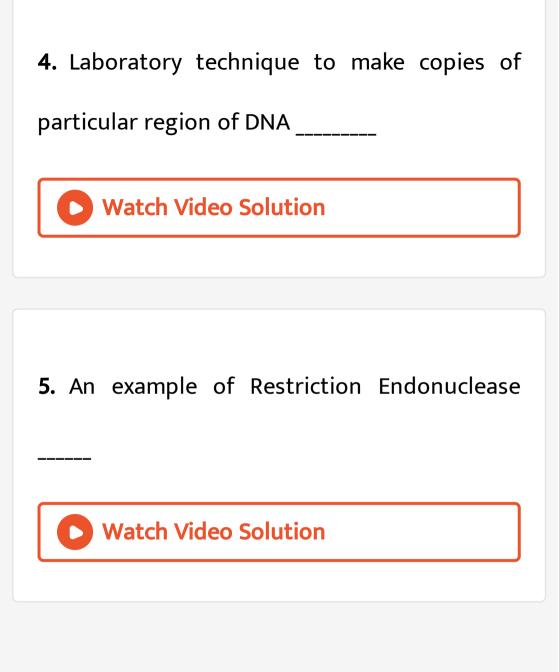
2. Who first demonstrated that fermentation

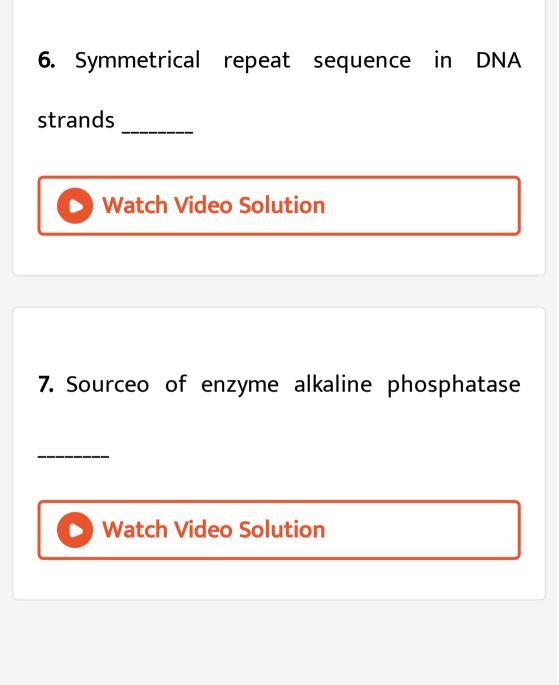
is caused by yeast?

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3. DNA fragment containing gene of interset

to be cloned _____





8. A DNA molecule capable of self-replication

and is used as a carrier of DNA fragment

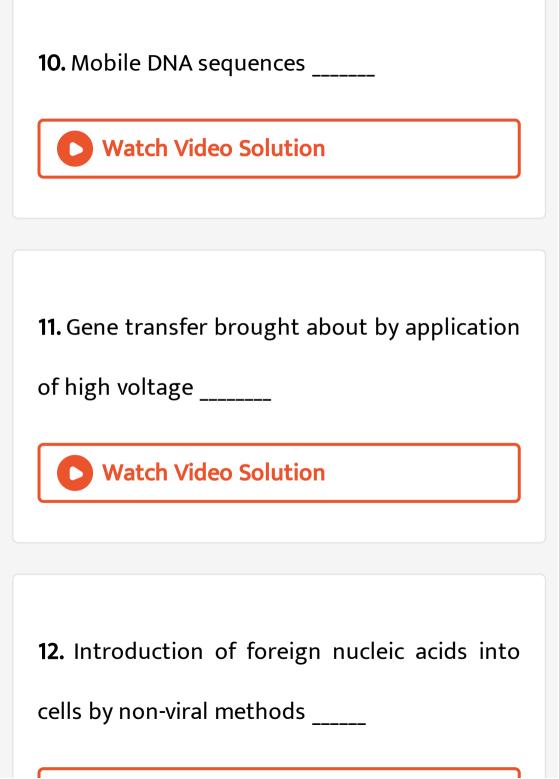


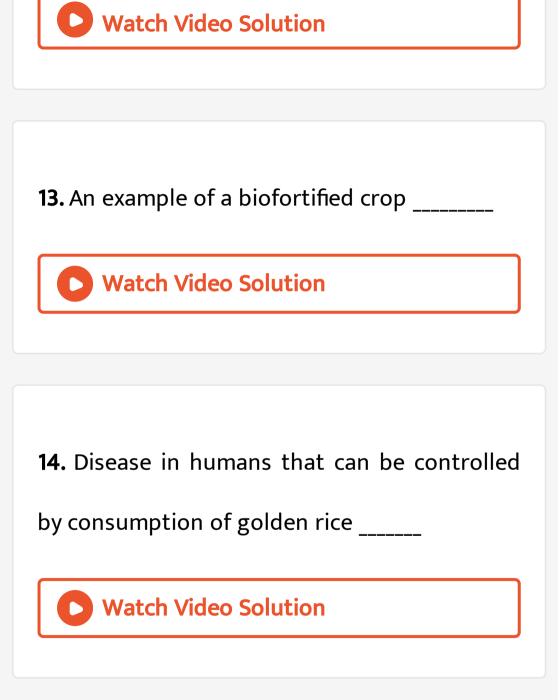
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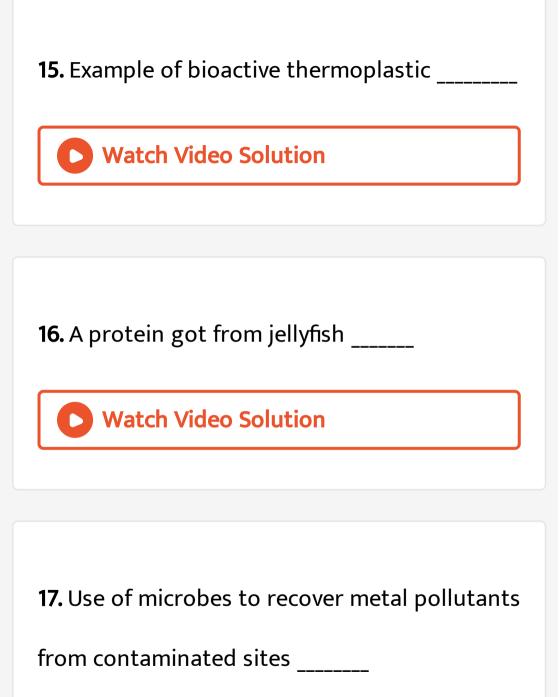
9. Extra chromosomal doube stranded circular

DNA seen in becateria ____









18. Property of Turmeric which was subjected

to patent ____

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Additional Questions And Answers Very Short Answers

1. What is biotechnology?

2. What is fermentation ? Watch Video Solution 3. What are microbial enzymes ? Watch Video Solution 4. What is meant by recombinant DNA technology? Vatch Video Solution

5. What are palindromic repeats ?

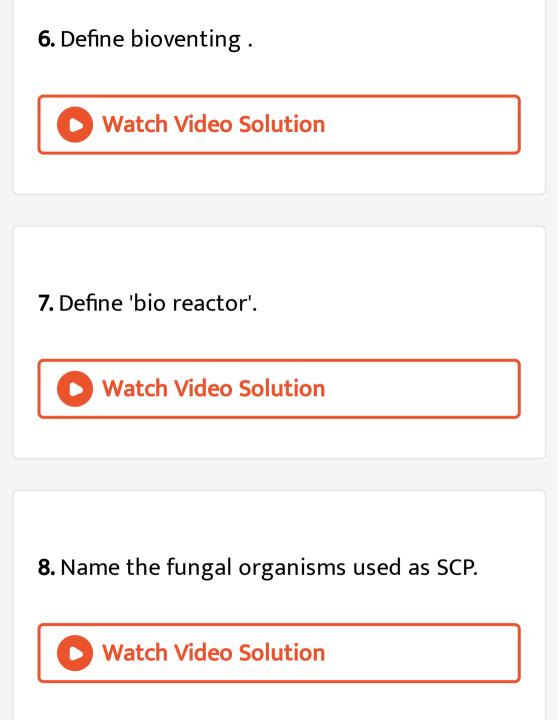
A.

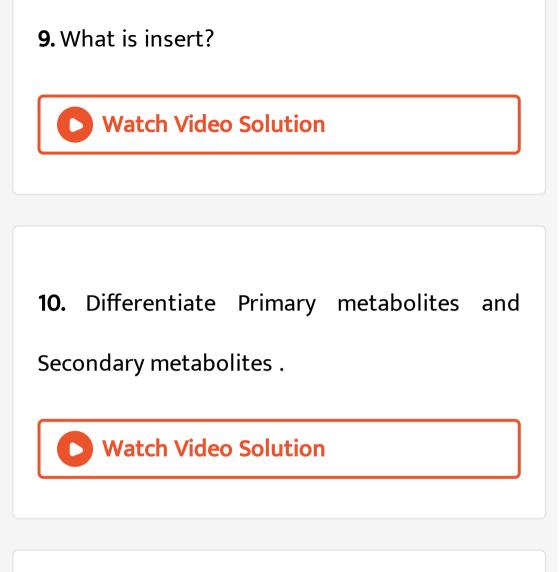
Β.

C.

D.

Answer:





11. Comment of PCR .

12. Name the basic tools which are required

for rDNA technology.

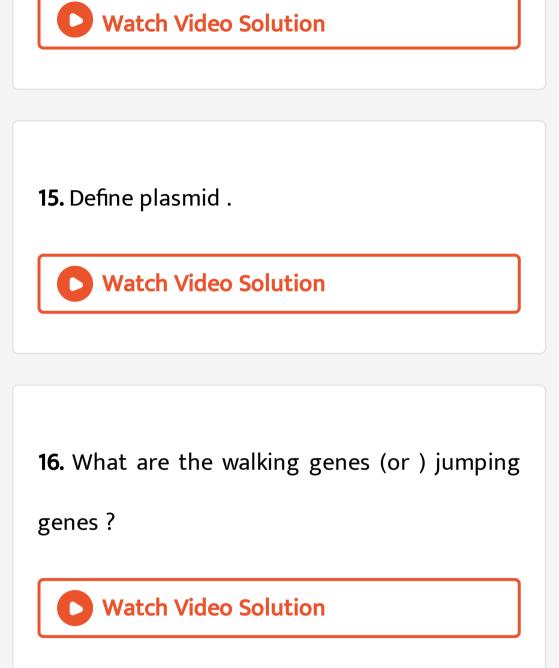


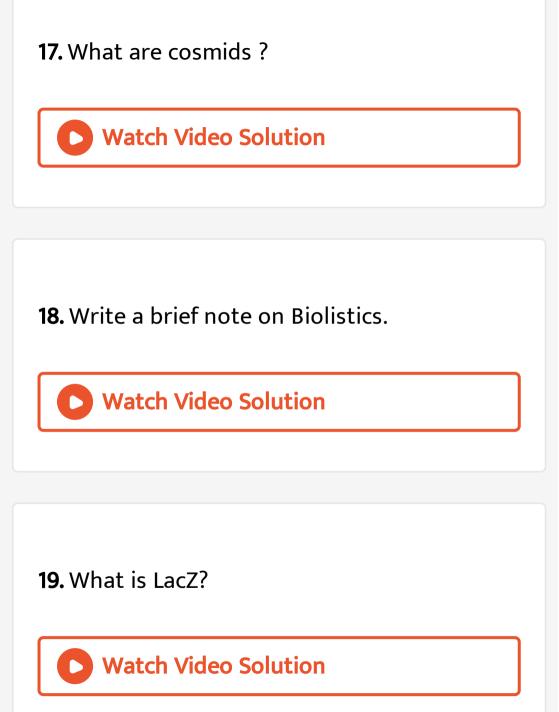
13. Differentiate Exonulease & Endonucleases .

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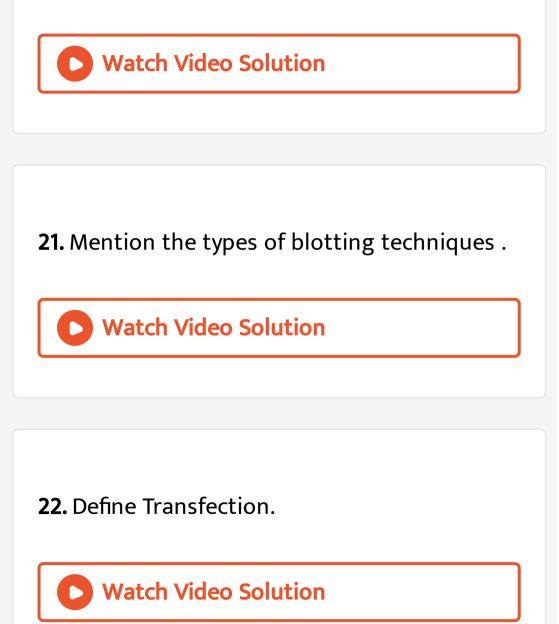
14. What is the role of alkaline phosphatase in

genetic engineering ?

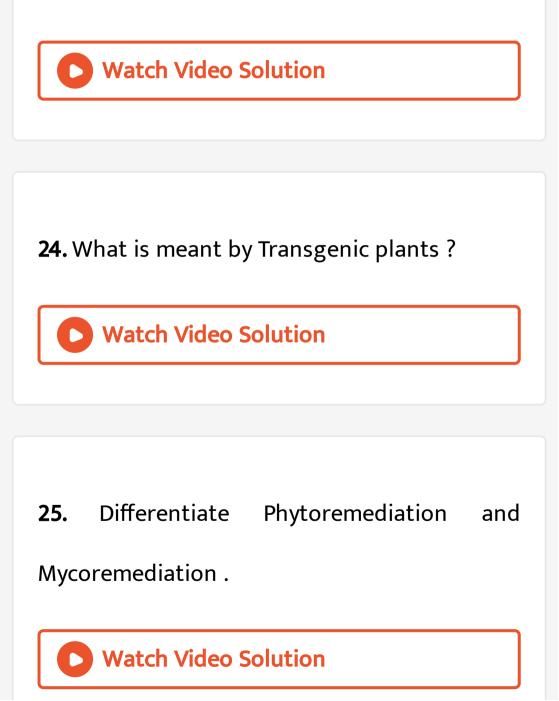




20. What do you mean by DNA probes ?



23. What is meant by genome sequencing ?



26. What is algal biofuel?

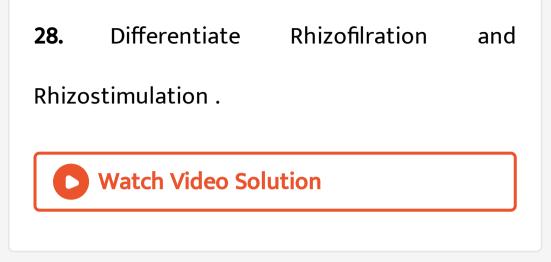
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27. Differentiate Bioleaching

and

Bioaugmentation.





29. Differentiate Symmetric and Asymmetric

cuts of restriction enxymes .

30. Write a note biochemical activity of DNA

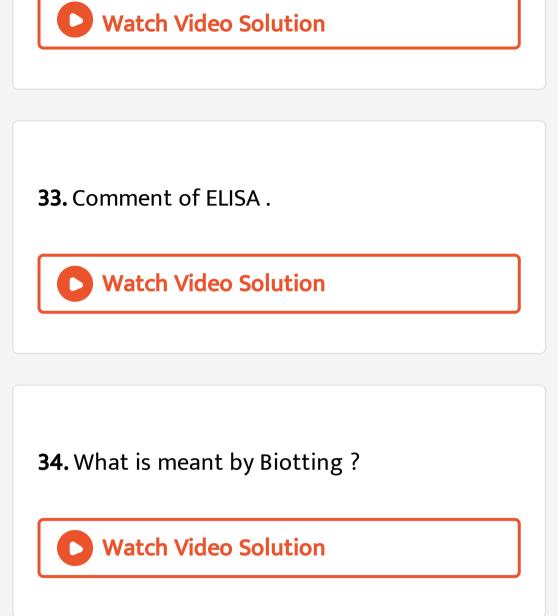
ligase .



31. Name the two types of gene transfer methods in plants .



32. Define Electrophoresis



35. Comment on plant genome project .



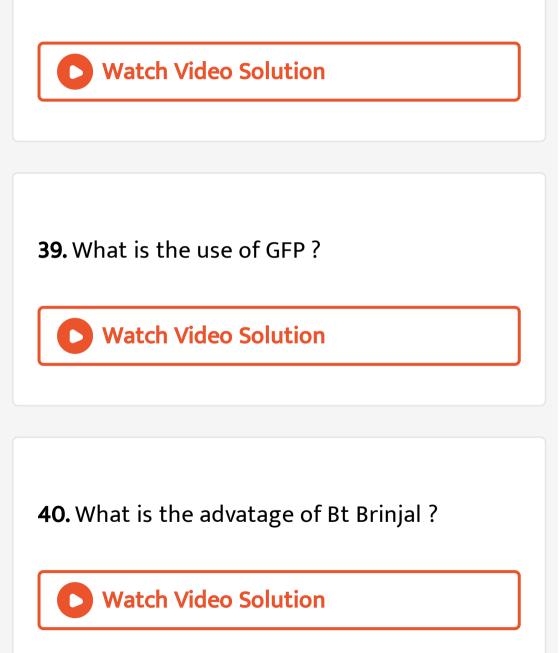
36. Mention some of the names of

biodegradable liopolymers .

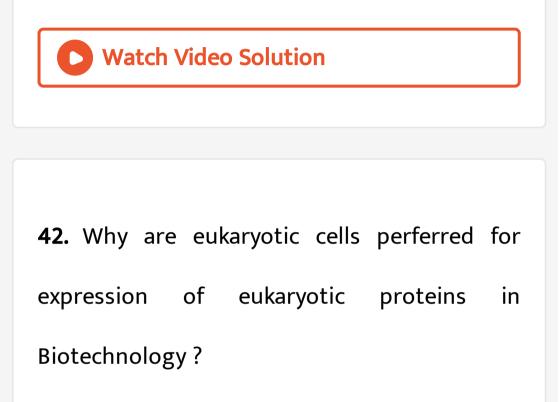
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37. What is antibiotic resistant markers ?

38. Comment on Lambda genome.



41. What is RNA interference ?





43. What is the adventage of multiple cloning

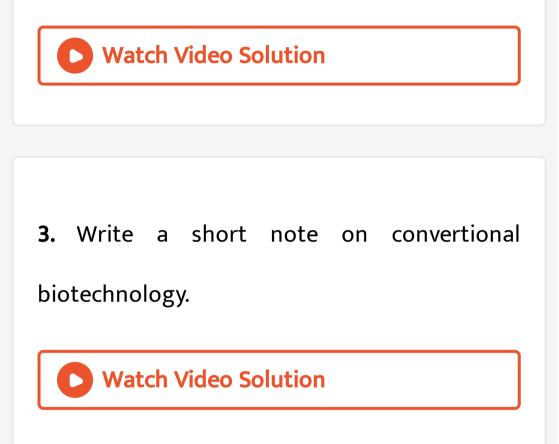
sites in vectors ?

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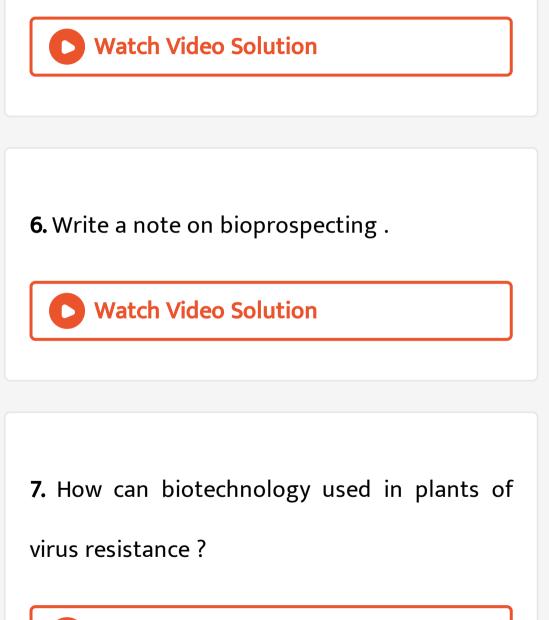
1. What are vectors ?

2. What are the types of vectors ?



4. Define biopiracy ? Give its examples .

5. Define Biopharming . Give its uses .



8. Enumerate the applications of single-cell protein .

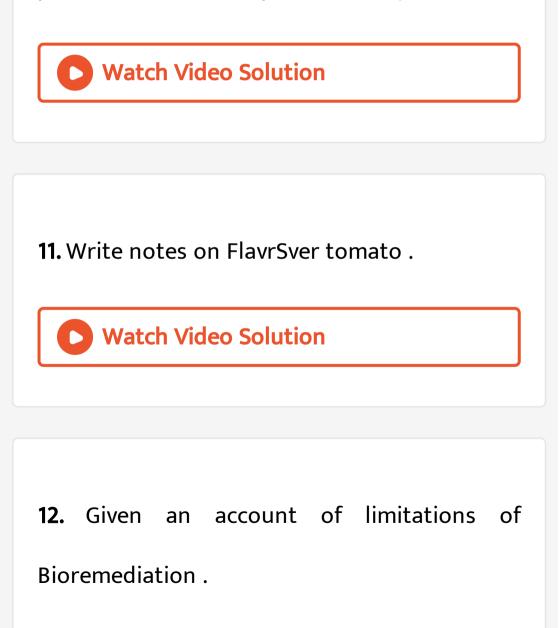


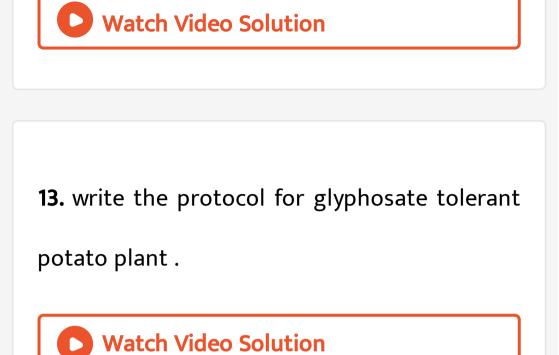
9. Explain about the Ti plasmid .



10. How will you transfer the genes into the

plant cell with the help of electricity?

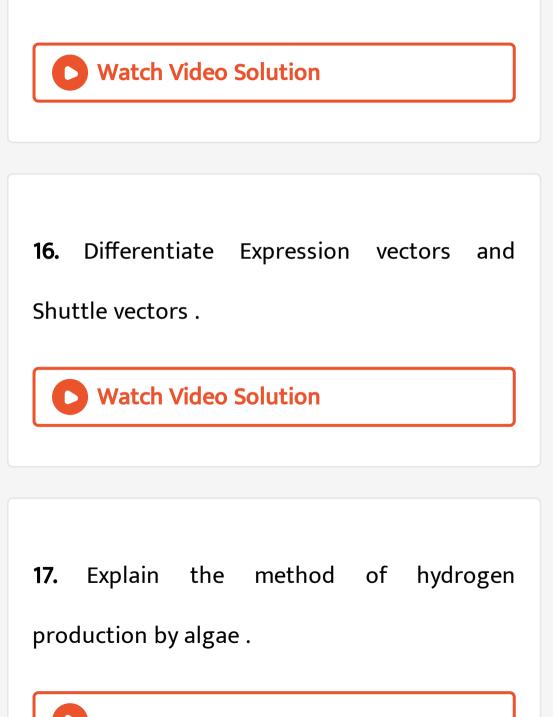




14. Differentiate Insertion vector and the

Replacement vector .

15. What is CRISPR - Cas 9?





18. Why is Escherichia coli widely used in

cloning experiments ?

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Additional Questions And Answers Long Answers

1. Write about the process of fermentation

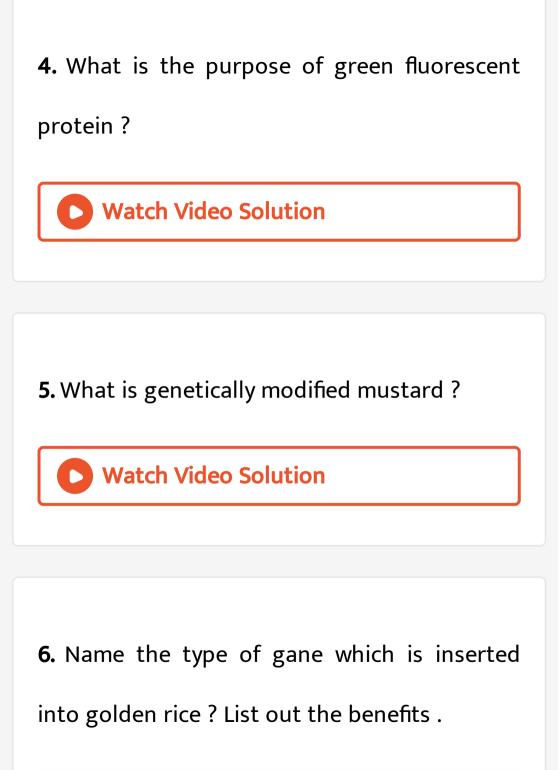
2. What are single cell proteins? List out its

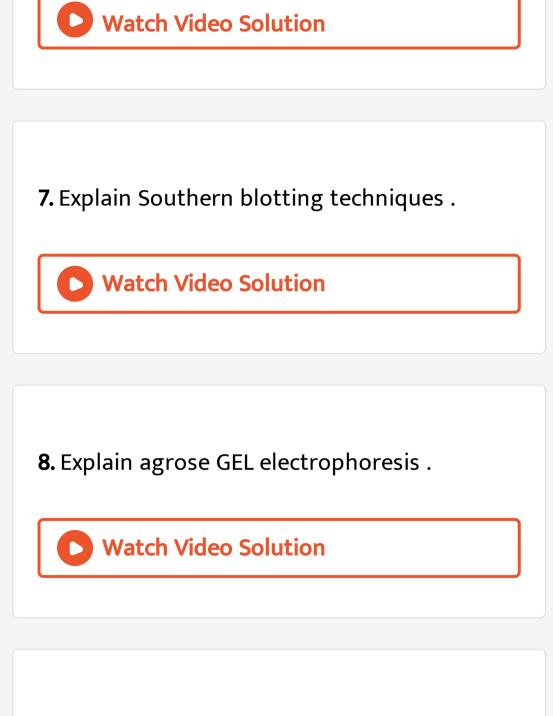
uses?

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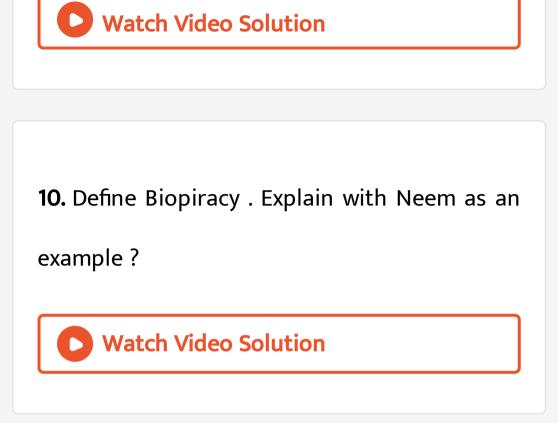
3. What are the step involved in recombinant

DNA rechnology ?





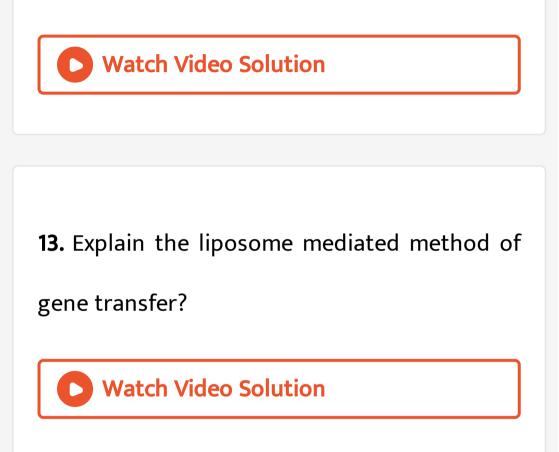
9. Given an account of BASTA.



11. Explain about the biodgradable plastics



12. Explain the replica plating technique .



Unit Test I Choose The Correct Answer

1. 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 . B. IV,II,III,I

C. I,II,III,IV

D. IV,III,I,II

Answer:

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2. Symmetrical repeat sequence in DNA

strands _____

3. Only type _____ restriction enzymes is preferred for use in recombinant DNA technology.

A. I

B. II

C. III

D. (a) and (c)

Answer:

4. 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 and Reason is correct explanation of Assertion . B. Both Assertion and Reason are true and

Reason is not correct explanation of Assertion .

C. Assertion is true , but reason is false

D. Assertion is false , but reason is true

Answer:

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5. 'Bt Cotton"

A. Bt cottion is a genetically modified

organism

B. Bt toxins are insecticidel to the larvae of

moths .

C. Increases pollination by inscets .

D. Cost of Bt cotton seed is high

Answer:

6. Choose the correct pair

A. Taq polymerase - Thermus aquaticus

B. Single cell protein - Human isulin

C. Spirulina - E-coli

D. Hydrogenase - Rhizo filtration

Answer: A

7. who discovered penicillin ?

A. Alexander Flemming

B. Kohler

C. Milstein

D. Karl Ereky

Answer:

8. _____ is a reconstructed plasmed .

A. PBR 322 plasmid

B. Ti plasmid

C. Vectors

D. Jumping plasmid

Answer:

9. Choose the incrrect pair

A. Indirect Gene Transfer - Vector mediated

gene transfer

B. Direct Gene Transfer - Vectorless gene

Transfer

C. Biolistics - Tungsten particles

D. Gene Transfer - Replica plating

Answer:

10. Restriction enzymes are

A. Not always required in genetic engineering

B. Essential tools in genetic engineering

C. Nucleases that cleave DNA at specific

sites

D. both b and c







Unit Test li Very Short Answer

1. What is Bioremediation?

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2. What is Tiplasmid ?

3. Write the adventages of herbicide tolerant

crops.



4. How will you transfer the genes into the

plant cell with the help of electricity?

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5. Is their any possibilities to tranfer a suitable

desirable gene to host plant without vector?

Justify you answer.