



BIOLOGY

BOOKS - FULL MARKS BIOLOGY (TAMIL ENGLISH)

PRINCIPLES AND PROCESSES OF BIOTECHNOLOGY

Textual Questions Solved

1. 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

Answer: D



Watch Video Solution

2. Plasmids are

- A. circular protein molecules
- B. required by bacteria

C. tiny bacteria

D. confer resistance to antibiotics

Answer: D



Watch Video Solution

3. EcoRI cleaves DNA at

A. AGGGTT

B. GTATATC

C. GAATTC

D. TATAGC

Answer: C



Watch Video Solution

4. Define Genetic engineering.

A. making artificial genes

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

C. production of alcohol by using micro organisms.

D. making artificial limbs, diagnostic instruments such as ECG and EFG , etc.,

Answer: B



Watch Video Solution

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 and ii

B. i and iii

C. ii and iii

D. i,ii and iii

Answer: D



Watch Video Solution

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 and i

B. iv, ii, iii and i

C. i,ii , iii and iv

D. iv, iii, i and ii

Answer: D



Watch Video Solution

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' CTACTA5'

C. 5'GAATTC 3' 3' CTTAAG' 5

D. 5'CACGTA 3' 3' CTCAGT' 5

Answer: C



Watch Video Solution

8. pBR 322, BR stands for

A. Plasmid Bacterial Recombination

B. Plasmid Bacterial Replication

C. Plasmid Boliver and Rodriguez

D. Plasmid Baltimore Rodriguez

Answer: C



Watch Video Solution

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

A. (A) Electrophoresis

B. Bioreactors

C. Vectors

D. Electroporation

Answer: B



Watch Video Solution

10. Match the following:

Column A	Column B
1. Exonuclease	a. add or remove phosphate
2. Endonuclease	b. binding the DNA fragments
3. Alkaline Phosphatase	c. cut the DNA at terminus
4. Ligase	d. cut the DNA at middle

A. a) 1 2 3 4
a b c d

B. b) 1 2 3 4
c d b a

C. c) 1 2 3 4
a c b d

D. d) 1 2 3 4
c d a b

Answer: D



Watch Video Solution

11. In which techniques Ethidium Bromide is used?

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

Answer: D



Watch Video Solution

12. Assertion: *Agrobacterium tumefaciens* is popular in genetic engineering because this bacterium is 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 true.

D. Assertion is false , but reason is false .

Answer: A



Watch Video Solution

13. Which one of the following is not true?

A. Ti plasmid causes the bunchy top disease

B. Multiple cloning site known as polylinker

C. Non - viral method of transfection of Nucleic acid in cell

D. Polyactic acid is a kind of biodegradable and bioactive thermoplastic.

Answer: A



Watch Video Solution

14. An analysis of chromosomal DNA using the southern hybridisation technique does not use

A. Electrophoresis

B. Blotting

C. Autoradiography

D. Polymerase Chain Reaction

Answer: A



Watch Video Solution

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

A. Competent cells

- B. Transformed cells
- C. Recombinant cells
- D. None of the above

Answer: A



Watch Video Solution

16. Some of the characteristics 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 protein

crystals which kill dipteran pests.

D. High yield resistant to ball worms

Answer: B



Watch Video Solution

17. How do you use the biotechnology in modern practice ?



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

20. What are the enzymes you can used to cut terminal end and internal phospho di ester bond

of nucleotide sequence?



[Watch Video Solution](#)

21. Name the chemicals used in gene transfer.



[Watch Video Solution](#)

22. What do you know about the word pBR332?



[Watch Video Solution](#)

23. Mention the application of biotechnology.



Watch Video Solution

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



Watch Video Solution

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

Justify you answer.



Watch Video Solution

26. How will you identify a vector ?



Watch Video Solution

27. Compare the various types of blotting techniques.



Watch Video Solution

28. Write the advantages of herbicide tolerant crops.



[Watch Video Solution](#)

29. Write the advantages and disadvantages of Bt cotton.



[Watch Video Solution](#)

30. What is Bioremediation ?



[Watch Video Solution](#)

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



Watch Video Solution

Additional Questions 1 Mark Questions

1. Who coined the term biotechnology _____.

A. Ernst Hoppe

B. Stanley Cohen

C. Ian Wilmet

D. Karl Ereky

Answer: D



Watch Video Solution

2. Zymology deals with

A. Study of yeast fungus and its practical applications.

B. Study of fermentation and its uses.

C. Study of Bioreactors and their construction methodology.

D. Study of zymase producing microbes and its benefits.

Answer: B



Watch Video Solution

3. Match column I with column II

Column I	Column II
A. One gene one enzyme hypothesis	<i>i.</i> Kohler and Milstein
B. Monoclonal antibodies	<i>ii.</i> Kary Mullis
C. First transgenic animal	<i>iii.</i> Beadle and Tatum
D. Development of PCR technology	<i>iv.</i> Ian Wilmet

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

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

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

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

Answer: A



Watch Video Solution

4. Find the incorrect statement:

A. French chemist Louis Pasteur demonstrated the fermentation.

B. Fermentor is a vessel providing optimal condition for microbial action.

C. Solvent extraction is an upstream process of fermentation.

D. Distillation and filtration comes under downstream process.

Answer: C



Watch Video Solution

5. Pick out the mismatched pair(s) :

(i) Amphotericin - B - *Streptomyces notatum*

(ii) Penicillin - *Penicillin nodosus*

(iii) Streptomycin - *Streptomyces grises*

(iv) Tetracycline - *Streptomyces aureofocins*

A. i and ii

B. ii and iii

C. iii and iv

D. i only

Answer: A



Watch Video Solution

6. Identify the non - fungal species used in SCP production .

(i) Candida (ii) Chlorella (iii) Chlamydomonas (iv) Cellulomonas

A. i and ii

B. ii and iii

C. ii, iii and iv

D. All the above

Answer: C



7. Select the correct restriction enzyme which breaks the phosphodiester bond within a DNA molecule.

(i) Bal 31 (ii) Hind II (iii) BamHI (iv) PvuI

A. i and iii

B. i, ii and iii

C. ii, iii and iv

D. i only

Answer: C



[Watch Video Solution](#)

8. Cohesive ends are

A. a) Blunt ends

B. b) Flush ends

C. c) Sticky ends

D. d) Symmetric cuts

Answer: C



[Watch Video Solution](#)

9. Self-ligation is prevented by

- A. DNA polymerase
- B. Helicase
- C. Alkaline phosphate
- D. DNA lipase

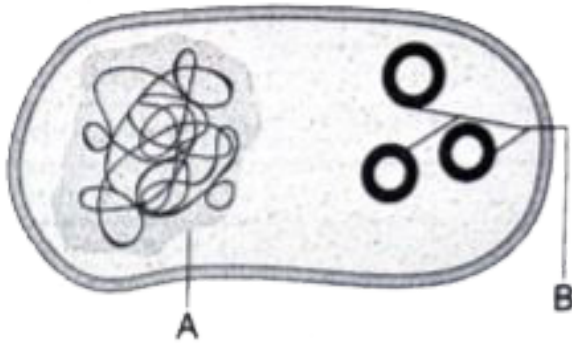
Answer: C



Watch Video Solution

10. Observe the diagram and name A and B.

im and name A and B.



A. a) A - Plasmid B - Vector

B. b) A - Nucleoid - B - Plasmid

C. c) A - Bacterial chromosome B - Vector

D. d) A - Nucleoid - B - x phage DNA

Answer: B



Watch Video Solution

11. A vector should

(i) contain suitable marker (ii) contain ori site

(iii) have poly linkers (iv) be small in size

A. a) i , ii and iii

B. b) ii , iii and iv

C. c) i , ii and iv

D. d) All the above

Answer: D



12. Number of base pairs does pBR 322 plasmid contains.....

A. 322

B. 4322

C. 4361

D. 3264

Answer: C



Watch Video Solution

13.is the plasmid present in Agrobacterium.



[Watch Video Solution](#)

14. puC 19 is an example for

- A. Shuttle vector
- B. Expression vector
- C. Cosmid
- D. Phagemid vector

Answer: B



[Watch Video Solution](#)

15. Statement 1 : YAC plasmid behaves like a yeast chromosome.

Statement 2 : Circular YAC multiplies in bacteria.

A. Statement 1 is correct and Statement 2 is also correct.

B. Statement 1 is correct and Statement 2 is incorrect .

C. Both the statement are incorrect .

D. Statement 1 is incorrect and Statement 2 is correct.

Answer: A



Watch Video Solution

16. Statement 1 : Liposome are the artificial lipoprotein vesicles.

Statement 2 : Liposomes are highly used in gene transfer.

A. Statement 1 is correct and Statement 2 is also correct.

B. Statement 1 is correct and Statement 2 is incorrect .

C. Both the statement are incorrect .

D. Statement 1 is incorrect and Statement 2 is correct.

Answer: D



Watch Video Solution

17. Statement 1 : DNA is a hydrophobic molecule.

Statement 2 : T - DNA is a part of E - coli plasmid.

A. Statement 1 is correct and Statement 2 is also correct.

B. Statement 1 is correct and Statement 2 is incorrect .

C. Both the statement are incorrect .

D. Statement 1 is incorrect and Statement 2 is correct.

Answer: C



Watch Video Solution

18. Statement 1 : Bioventing procedure increases O_2 flow to accelerate degradation of pollutants

Statement 2 : Bioaugmentation uses microbes to recover metal pollutants from contaminated sites.

A. Statement 1 is correct and Statement 2 is also correct.

B. Statement 1 is correct and Statement 2 is incorrect .

C. Both the statement are incorrect .

D. Statement 1 is incorrect and Statement 2 is correct.

Answer: B



Watch Video Solution

19. Assertion (A) : Golden rice helps to overcome childhood blindness.

Reason (R) : It is rich in β carotene.

A. a) Both A and R are wrong .

B. b) A is right R is wrong.

C. c) R explains A.

D. d) A and R are right , R does not explain A.

Answer: C



Watch Video Solution

20. Assertion (A) : Expression vectors are suitable for expressing foreign proteins.

Reason (R) : pBR 322 is an expression vectors.

A. Both A and R are wrong .

B. A is right R is wrong.

C. R explains A.

D. A and R are right , R does not explain A.

Answer: D



Watch Video Solution

21. Assertion (A) : *Pseudomonas putida* is utilized in the production of Biological hydrogen.

Reason (R) : During photosynthesis , it releases oxygen.

A. Both A and R are wrong .

B. A is right R is wrong.

C. R explains A.

D. A and R are right , R does not explain A.

Answer: A



Watch Video Solution

22. Assertion (A) : DMH - 11 is a transgenic mustard.

Reason (R) : It is developed by using barnase/barstar technology.

A. Both A and R are wrong .

B. A is right R is wrong.

C. R explains A.

D. A and R are right , R does not explain A.

Answer: C



Watch Video Solution

23. Green fluorescent protein (GFP) was isolated from

A. Aequorea Victoria

B. *Arabidopsis thaliana*

C. *Agrobacterium tumefaciens*

D. *Escherichia coli*

Answer: A



Watch Video Solution

24. Tetracycline is obtained from.....

A. a) *S.nodous*

B. b) *S.aurofaciens*

C. c) *S.grise*

D. d) P.chryosogenum

Answer: B



Watch Video Solution

25. Today more thanrestriction enzymes have been isolated.

A. a) 800

B. b) 900

C. c) 1000

D. d) 870

Answer: B



Watch Video Solution

Additional Questions 2 Mark Questions

1. How modern biotechnology differs from conventional biotechnology ?



Watch Video Solution

2. What is a fermentor ?

 [Watch Video Solution](#)

3. Define fermentation .

 [Watch Video Solution](#)

4. What are primary metabolites ? Give example.

 [Watch Video Solution](#)

5. How microbial enzymes are produced ? Mention its significance.



[Watch Video Solution](#)

6. Mention any two bacterial species used as SCP.



[Watch Video Solution](#)

7. Name any two fungal species used as SCP.



[Watch Video Solution](#)

8. Expand PCR and mention its use.



[Watch Video Solution](#)

9. An example of Restriction Endonuclease _____



Watch Video Solution

10. What is a palindrome sequence ?



Watch Video Solution

11. Write an palindrome sequence of DNA.



Watch Video Solution

12. Difference between flush end and cohesive end of DNA.

 [Watch Video Solution](#)

13. What is the role of DNA ligase in genetic engineering ?

 [Watch Video Solution](#)

14. Plasmids are

 [Watch Video Solution](#)

15. Classify vectors and explain them.



Watch Video Solution

16. What are expression vectors.



Watch Video Solution

17. Name any two vectors that you know?



Watch Video Solution

18. Write a brief note on BAC vector.



Watch Video Solution

19. What does Blotting refers to ?



Watch Video Solution

20. Write the advantages and disadvantages of Bt cotton.



Watch Video Solution

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



Watch Video Solution

22. What is PEG?



Watch Video Solution

23. Define Biopharming . Give its uses .



Watch Video Solution

24. Define the terms (a) Bioventing (b) Bioaugmentation



Watch Video Solution

25. How hydrogen biologically synthesized ?



Watch Video Solution

26. Define Biopiracy ?



Watch Video Solution

27. What are polylinkers ?



[Watch Video Solution](#)

Additional Questions 3 Mark Questions

1. Mention any three historical events which took place in the 21st century for the development of biotechnology.



[Watch Video Solution](#)

2. In the fermentation process, what does upstream and downstream refers to ? Explain.



Watch Video Solution

3. Write about the process of fermentation



Watch Video Solution

4. What are secondary metabolites?



Watch Video Solution

5. What is SCP ?



[Watch Video Solution](#)

6. Mention any three algal species used for SCP production.



[Watch Video Solution](#)

7. Though SCP is a rich protein source , it has not been widely used as food supplement. Point a reason to support this statement.



[Watch Video Solution](#)

8. Enumerate the applications of single-cell protein .



[Watch Video Solution](#)

9. Classify restriction enzyme based on their mode of action.



[Watch Video Solution](#)

10. Which type of restriction enzyme is widely used in rDNA technology ? Why ?

 [Watch Video Solution](#)

11. Explain the procedure behind the naming of Restriction Enzymes by citing an example.

 [Watch Video Solution](#)

12. Give a short not on Alkaline phosphate.

 [Watch Video Solution](#)

13. What are the features that a vector must possess to facilitate cloning ?



Watch Video Solution

14. Draw and label Ti plasmid .



Watch Video Solution

15. What do you mean by the term "walking genes"? Explain.



[Watch Video Solution](#)

16. How does shuttle vectors differ from other types of vectors ?



[Watch Video Solution](#)

17. Given below are the three DNA palindrome sequences . Name the respective restriction enzymes which cleaves those sequence also mention the microbial sources

(a) 5' AGCT3' (b) 5' GGCC3' (c) 5'GAATTC3'
3' *TCGA*5' 3'CCGG5' 3' CTTAAG5'

 [Watch Video Solution](#)

18. Why is it difficult for DNA to pass through cell membrane ? How the bacterial cells can be made competent to take up DNA ?

 [Watch Video Solution](#)

19. Write a brief note on Biolistics.

 [Watch Video Solution](#)

20. Agrobacterium - a natural genetic engineer of plants justify the statements.

 **Watch Video Solution**

21. What is antibiotic resistant markers ?

 **Watch Video Solution**

22. Mention the types of blotting techniques .

 **Watch Video Solution**

23. What is CRISPR - Cas 9 ?



[Watch Video Solution](#)

24. What is RNA interference ?



[Watch Video Solution](#)

25. write the protocol for glyphosate tolerant potato plant .



[Watch Video Solution](#)

26. 'Bt Cotton'



Watch Video Solution

27. Give a detailed account on Golden rice.



Watch Video Solution

28. Name any 3 bacterial species used to generate polyhydroxybutyrates (PHB).



Watch Video Solution

29. What is the purpose of green fluorescent protein ?



Watch Video Solution

30. How turmeric biopiracy is prevented by Indian Government?



Watch Video Solution

Additional Questions 5 Mark Questions

1. What are the steps involved in recombinant DNA technology?



Watch Video Solution

2. (b) Explain in detail about various types of direct gene transfer methods.



Watch Video Solution

3. Describe the procedure involved in Blue-White colony selection methods.



[Watch Video Solution](#)

4. Write a note on Replica plating technique.



[Watch Video Solution](#)

5. How Agarose Gel Electrophoresis is performed?



[Watch Video Solution](#)

6. Explain Southern blotting techniques .



[Watch Video Solution](#)

Higher Order Thinking Skills Hots Questions

1. Give the technical terminologies for the following statements.

(a) Autonomous, self - replicating , circular DNA

(b) Molecular scissors

(c) Symmetrical repeated sequence in DNA strands

(d) Mobile genetic elements



[Watch Video Solution](#)

2. Observe the given flow chart and complete it .



[Watch Video Solution](#)

3. Name the products of the following combinations.

Bacterial plasmid + cos - site =

Bacterial plasmid + phage - DNA =



[Watch Video Solution](#)

4. Golden rice is a bio-fortified rice developed by technology . It differs from its parental strain by possessing 'psy' gene, 'crt-1' gene and 'lyc' gene which are responsible for beta- carotene synthesis.

(a) Name the sources of the above mentioned genes.

(b) Which disease can be controlled/prevented if a person's diet has golden rice ?



[Watch Video Solution](#)