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# Bio-Botany

## 1 Mark Solved Questions

## 1050 Questions

12

**Only Book having Objective Questions framed line by line from the Text Book**

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# Contents



## Highlights

**1.** What is totipotency?

1. *The genetic ability of a plant cell to produce the entire plant under suitable conditions.*

2. Such plant cell is called ***totipotent.***

**2.** What is micropropagation?

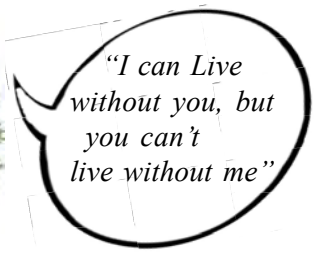
*The regeneration of a whole plant from single cell, tissue or small pieces of vegetative structures through tissue culture.*

**3.** What is corpusculum?

A ***clamp*** or ***clip*** like ***sticky structure*** in which the pollinia are attached.

**4.** What is retinaculum?

The ***filamentous*** or ***thread like part*** arising from each pollinium is called retinaculum.




**Q:** A plant says,"I can Live without you, but you can't live without me" Is it true? Give reasons:

**Ans:** ***Yes***

**Reasons**:

1. Plants have ***autotrophic nutrition.***
2. They synthesise their own food by ***photosynthesis*** using the following:
   - ❖ *Chlorophyll*
   - ❖ *Water*
   - ❖ *Sunlight*
   - ❖ $CO_2$
3. Man depends on plants for ***food*** and ***oxygen.***

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# Science & Biology

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# 4 Principles and Processes of Biotechnology

## I. Book Back Solved Questions

### Choose the Correct Answer

**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*

**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*

**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 organisms.*

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

**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 belongs to a class of enzymes called nucleases.*

Choose the correct option regarding above statements

*a. I & II* *b. I & III*

*c. II & III* *d. I,II & III*

**6.** The process of recombinant DNA technology has the following steps

*I. Amplification of the gene*

*II. Insertion of recombinant DNA into the host cells*

*III. Cutting of DNA at specific location using restriction enzyme .*

*IV. Isolation of genetic material (DNA)*

1. (d) 2. (d) 3. (c) 4. (b) 5. (d) 6. (e)

*Pick out the correct sequence of step for recombinant DNA technology.*

*a. II, III, IV, I* *d. IV, III, I, II*
*b. IV, II, III, I* *e. IV, III, II, I*
*c. I, II, III, IV*

**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′*

**8.** pBR 322, pBR stands for

*a. Plasmid Bacterial Recombination*
*b. Plasmid Bacterial Replication*
*c. Plasmid Boliver and Rodriguez*
*d. Plasmid Baltimore and Rodriguez*

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

*a. Electrophoresis b. Bioreactors*
*c. Vectors* *d. Electroporation*

*Key : A biosensor is constructed out of any biological materials such as* ***enzymes, microbes, cell organelles, hormones*** *etc.*

**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 |

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| a) | A | B | C | D |
| b) | C | D | B | A |
| c) | A | C | B | D |
| d) | C | D | A | B |

**11.** In which techniques Ethidium Bromide is used?

*a. Southern Blotting techniques*
*b. Western Blotting techniques*
*c. Polymerase Chain Reaction*
*d. Agarose Gel Electrophoresis*

**12. Assertion** : *Agrobacterium tumifaciens* 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 false.*

*d) Assertion is false, but reason is true.*

*e) Both assertion and reason are false.*

**13.** Which one of the following is not correct statement?

7. (c) 8. (c) 9. (c) 10. (d) 11. (d) 12. (d) 13. (a)

*a) Ti plasmid causes the bunchy top disease*

*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.*

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

*a) Electrophoresis*

*b) Blotting*

*c) Autoradiography*

*d) Polymerase Chain Reaction*

**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* *e) b and c*

**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 and resistant to ball worms*

## II. Additional Solved Questions

**1.** The term biotechnology was coined by

*a) Louis Pasteur* *b)Karl Ereky*

*c) Operon* *d) Alwin*

**2.** 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*

**3.** Which of the following is correctly matched?

*a.1770 -Basis of alcoholic fermentation*

*b. 1919- First viral vaccine*

*c. 1928 - Human genome project*

*d. 2001 - First plant genome*

**4.** Match the following and select the correct option

i.Edward Jenner - A. Invertase

ii.Gerardus and Jons - B. Role of micro-organisms in fermentation.

iii. Ernst Hoppe, Seyler - C. First viral vaccine

iv. Louis Pasteur - D. Protein

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

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

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

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

**5.** Penicillin was discovered by

*a. Sir Robert*

*b. Watson and Crick*

14. (d) 15. (e) 16. (d) **II.** 1.(b) 2.(c) 3.(a) 4.(a) 5.(d)

*c. Herbert Boyer*
*d. Alexander Fleming*

**6.** 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- Sanger and Gilbert*
*d. Restriction enzyme- Arber, Smith and Nathans*

**7.** 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*

**8.** First crop plant genome sequenced in
*a. Pisum sativum* *b. Hibiscus*
*c.Oryza sativa*
*d. Arabidopsis thaliana*

**9.** First plant genome sequenced in
*a. Oryza sativa* *b.Agaricus*
*c. Chlamydomonas*
*d. Arabidopsis thaliana*

**10**. Human genome project is completed in the year
*a.2001* *b. 2002*
*c.2003* *d. 2004*

**11.** Which of the following is wrongly 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*

**12**.The Study of fermentation and its practical uses is called
*a. Zymology* *b. Fermentology*
*c. Mycology* *d. Phycology*

**13**. 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*

**14**. Which of the following enzyme used to join the DNA fragments?
*a. DNA polymerase*
*b. Primase*
*c. Ligase*
*d. Endonuclease*

**15. 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 vector.
*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.*

6.(c) 7. (b) 8. (c) 9. (d) 10. (c) 11. (d) 12. (a) 13.(c) 14.(c) 15.(a)

*d. Assertion is false, but reason is true.*
*e. Both assertion and reason are false*

**16**. 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*

**17.** Which of the following enzyme prevents self ligation?
*a. Endonuclease*
*b. DNA ligase*
*c. Alkaline phosphatase*
*d. DNA synthase*

**18.** In bacteria, genes for antibiotic resistance are located in
*a. Plasmid* *b. Cytoplasm*
*c. Nucleus* *d. Mitochondria*

**19.** Plasmid is also called
*a. Genetic marker*
*b. Cloning vehicle*
*c. Cloning marker*
*d. Cloning site*

**20.** The most popular and widely used engineered plasmid vector is
*a. pBR 322*
*b. Ti plasmid*
*c. YAC vector*
*d. Shuttle vector*

**21.** 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.*

**22.** Vectors designed to replicate in cells of two different species are called
*a. Phasmids*
*b. Cosmids*
*c. Phagemid vectors*
*d. Shuttle vectors*

**23.** Which of the following bacterium is considered as 'natural genetic engineer'?
*a. Agrobacterium tumefaciens*
*b. Agrobacterium radiobacter*
*c. Escherichia coli*
*d. Thermus aquaticus*

**24.** 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*

**25.** Aminobenzyloxymethyl filter paper is used for
*a. Southern blotting*
*b. Northern blotting*
*c. Western blotting*
*d. Southern north blotting*

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

16. (b) 17. (c) 18. (a) 19. (b) 20. (a) 21. (b) 22. (d) 23. (a) 24. (c) 25. (b) 26. (b)

*a. Agarose*
*b. Polyacrylamide*
*c. Ethidium bromide*
*d. Agar agar*

**27.** Agarose gel electrophoresis separates DNA molecules of size
*a. 10-20bp* *b. 20-30bp*
*c. 100-20000 bp* *d. 100-200bp*

**28.** In electrophoresis DNA will migrate towards
*a. Anode*
*b. Cathode*
*c. Negative electrode*
*d. None of the above*

**29.** Particle gun is also known as
*a. Genetic gun* *b. Gene gun*
*c. DNA gun* *d. RNA gun*

**30.** Blue, white screening is used for
*a. To detect gene mutation*
*b. To screen for recombinant plasmid*
*c. To detect host DNA*
*d. To screen chromosomal DNA*

**31.** Which of the enzyme encoded by lacZ ?
*a. Beta galactosidase*
*b. Lactase*
*c. Amylase* *d. Nuclease*

**32.** 5-Bromo -4 -chloro indolyl-β-D-galacto-pyranoside is called
*a. X-gal* *b. Y-gal*
*c. Z-gal* *d. XY-gal*

**33.** 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*

**34.** The first monoclonal antibody is produced by
*a. Watson and Crick*
*b. Kohler and Milstein*
*c. Robert and Herbert*
*d. George and Edward*

**35.** When were biolistic transformation first developed?
*a. 1987* *b. 1988*
*c. 1989* *d. 1990*

**36.** The first genetically modified food is
*a. Golden rice*
*b. Bt potato*
*c. Flavr Savr tomato*
*d. Golden wheat*

**37.** The first transgenic sheep is
*a. Billy* *b. Lambert*
*c. Dolly* *d. Glory*

**38.** PCR developed by
*a. Sir Robert G. Edward*
*b. Kary Mullis*
*c. Arber*
*d. Sanger*

**39.** Sir Robert G. Edwards developed
*a. In vitro fertilization in animal*
*b. In vivo fertilization in animal*
*c. In vitro fertilization in plant*
*d. In vivo fertilization in plant*

**40.** James Allison and Tasuku Honjo discovered a
*a. Enzyme found in immune cells*
*b. Lipid found in immune cells*

27. (c) 28. (a) 29. (b) 30. (b) 31. (a) 32. (a) 33. (d) 34. (b) 35. (a)
36. (c) 37. (c) 38. (b) 39. (a) 40. (c)

*c. Protein found in immune cells*
*d. Minerals found in immune cells.*

**41**. Match the following and select the correct sequence

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

*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*

**42**. What protein is associated with CRISPR genome editing?

*a. Cas 3* *b. Cas 9*
*c. Cpr 3* *d. Cpr 9*

**43.** DMH-11 is a

*a. Transgenic brinjal*
*b. Transgenic rice*
*c. Transgenic tomato*
*d. Transgenic mustard*

**44.** A precursor of vitamin A is

*a. Alpha -carotene b. Beta carotene*
*c. Gamma- carotene*
*d. None of the above*

**45.** Trade name of glyphosate herbicide is

*a. Basta* *b. Monsanta*
*c. Round up* *d. Psy*

**46.** Glyphosate herbicide produced by the USA company

*a. Monsanto*
*b. Medicago*
*c. Trademark office*
*d. MNC*

**47.** PPT gene was isolated from

*a. Streptomyces hygroscopicus*
*b. Medicago sativa*
*c. Bacillus thuringiensis*
*d. Erwinia auredorora*

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

*a. Cry* *b. Cry 1AC*
*c. Cry 1AD* *d. Cry AB*

**49.** Psy gene is obtained from the plant

*a. Narcissus pseudonarcissus*
*b. Oryza sativa*
*c. Bacillus megaterium*
*d. Erwinia auredorora*

**50.** Crt -I gene is obtained from

*a. Narcissus pseudonarcissus*
*b.Erwinia auredorora*
*c. Pseudomonas*
*d. Alcaligenes eutrophus.*

**51.** Chemical basis of alcoholic fermentation gave by

*a. Edward Jenner*
*b. Ernst Hoppe*
*c. Lavoisier*
*d. Louis Pasteur*

41. (a) 42. (b) 43. (d) 44. (b) 45. (c) 46. (a) 47. (b) 48. (b)
49. (a) 50. (b) 51. (c)