CHAPTER – 18: Biotechnology and ItsApplications

1. **Which of the following is a major application ofbiotechnology in medicine?**
   - **a) Production of biofuels**
   - **b) Genetic modification of crops**
   - **c) Production of recombinant proteins**
   - **d) Bioremediation**

Which biotechnology application involvesusing microorganisms to clean up pollutants?

   - **a) Gene therapy**
   - **b) Bioremediation**
   - **c) Recombinant DNA technology**
   - **d) Genetic engineering**

3. **What is the primary purpose of using genetically modified crops in agriculture?**
   - **a) To increase crop yield and resistance**
   - **b) To enhance soil quality**
   - **c) To reduce the need for pesticides**
   - **d) To improve crop taste**
4. **Which process is used to produce humaninsulin using biotechnology?**
   - **a) Gene cloning**
   - **b) PCR**
   - **c) Recombinant DNA technology**
   - **d) Gel electrophoresis**
5. **What is the role of biopharmaceuticals inmedicine?**
   - **a) To diagnose diseases**
   - **b) To treat diseases through biologicalproducts**
   - **c) To conduct genetic research**
   - **d) To improve agricultural practices**
6. **Which technique is commonly used toproduce vaccines in biotechnology?**
   - **a) Gene therapy**
   - **b) Recombinant DNA technology**
   - **c) Gene cloning**
   - **d) CRISPR-Cas9**

7. **What is the main advantage of using genetically modified organisms (GMOs) in agriculture?**
   - **a) Increased resistance to pests and diseases**
   - **b) Increased soil erosion**
   - **c) Higher cost of production**
   - **d) Reduced crop yield**
8. **Which biotechnological method is used forthe production of biofuels?**
   - **a) Gene therapy**
   - **b) Fermentation**
   - **c) Gene cloning**
   - **d) DNA sequencing**
9. **What does the term "bioreactor" refer to?**
   - **a) A device for growing cells ormicroorganisms**
   - **b) A method for gene editing**
   - **c) A technique for DNA sequencing**
   - **d) A tool for protein purification**
10. **Which of the following is an example of abiotechnological application in environmental protection?**
    - **a) Bioremediation**
    - **b) Genetic modification of livestock**
    - **c) Protein synthesis**
    - **d) DNA amplification**
11. **What is the purpose of using "genetherapy"?**
    - **a) To edit genes in an organism's genome**
    - **b) To introduce therapeutic genes into apatient's cells**
    - **c) To produce genetically modified crops**
    - **d) To sequence entire genomes**
12. **Which technique involves the use of microorganisms to produce antibiotics?**
    - **a) Fermentation**
    - **b) Gene editing**
    - **c) PCR**

d) Protein electrophoresis

13. What is the main goal of using geneticallymodified bacteria in biotechnology?

a) To produce pharmaceuticals andchemicals

b) To enhance human health

c) To sequence DNA

d) To clone genes

14. Which of the following is an application ofbiotechnology in agriculture?

a) Production of genetically modified crops

b) Gene editing in animals

c) Protein purification

d) Sequencing plant genomes

15. What is the primary purpose of usingrecombinant DNA technology in agriculture?

a) To develop crops with improved traits

b) To sequence plant genomes

c) To clone plants

d) To produce biofuels

16. Which biotechnology application is used toproduce therapeutic proteins?

a) DNA sequencing

b) Gene therapy

c) Bioremediation

d) Genetic engineering

17. What is a common method for producinghuman hormones using biotechnology?

a) Recombinant DNA technology

b) PCR

c) Gene cloning

d) Gel electrophoresis

18. Which process is commonly used to produce enzymes for industrial use?

a) Fermentation

b) Gene editing

c) DNA sequencing

d) PCR

19. What is the main benefit of using biotechnology for producing vaccines?

a) Ability to create vaccines more rapidly
b) and effectivelyIncreased cost of production

c) Higher risk of contamination

d) Reduced vaccine efficacy

20. Which biotechnological process involvesmodifying the genetic material of an organism to achieve desired traits?

a) Genetic engineering

b) PCR

c) Gene sequencing

d) Cloning

21. What is the purpose of using a "bioreactor"in biotechnology?

a) To culture cells or microorganisms undercontrolled conditions

b) To sequence DNA

c) To amplify genes

d) To clone organisms

22. Which biotechnology application involvesthe use of microorganisms to decompose organic waste?

a) PCR

b) Gene therapy

c) Recombinant DNA technology

d) Bioremediation

23. What is a primary application of biotechnology in the food industry?

a) Biomedics

b) Development of biofuels

c) Production of antibiotics

d) Production of genetically modified crops

24. Which of the following techniques is used toproduce genetically modified plants?

a) Gene gun

b) PCR

c) Gel electrophoresis

d) Cloning

25. What is the role of "synthetic biology" inbiotechnology?

a) To design and construct new biologicalparts and systems

b) To sequence DNA

c) To clone genes

d) To produce recombinant proteins

26. Which biotechnology application is used toproduce genetically modified microorganisms?

a) Genetic cloning

b) PCR

c) DNA sequencing

d) Genetic Engineering

27. What is the primary purpose of using biotechnological methods in environmental management?

a) To reduce pollution and manage waste

b) To produce food products

c) To enhance agricultural productivity

d) To sequence genomes

28. Which method is commonly used for the production of antibodies in biotechnology?

a) Hybridoma technology

b) PCR

c) DNA sequencing

d) Gel electrophoresis

29. What is the main goal of using biotechnology in the pharmaceutical industry?

a) To develop new drugs and therapies

b) To sequence entire genomes

c) To clone genes

d) To produce biofuels

30. Which biotechnology technique is used tomodify the genetic material of crops to improve their resistance to pests?

a) DNA sequencing

b) PCR

c) Genetic Enginering

d) Gel electrophoresis

31. What is the role of biotechnology in theproduction of biofuels?

a) To convert organic materials intorenewable energy sources

b) To sequence DNA

c) To clone genes

d) To produce pharmaceuticals

32. Which of the following is an example of agenetically modified organism used in agriculture?

a) Bt corn

b) Organic apples

c) Traditional wheat

d) Conventional rice

33. What is the purpose of using "molecularmarkers" in agriculture?

a) To identify and select plants withdesirable traits

b) To clone genes

c) To produce recombinant proteins

d) To sequence genomes

34. Which biotechnological process involves theuse of microorganisms to produce vaccines?

a) PCR

b) Fermentation

c) DNA sequencing

d) Gene cloning

35. What is the main benefit of using biotechnology for agricultural pest management?

a) Increase crop yield

b) Reduced chemicals

c) Higher crop prices

d) Reduced crop yield

36. Which biotechnology application involvesthe use of enzymes to process food?

a) Food biotechnology

b) Genetic engineering

c) Gene therapy

d) PCR

37. What is the role of "plant tissue culture" inbiotechnology?

a) To propagate plants yield

b) To propagate plants in a controlledenvironment

c) To clone genes

d) To produce biofuels

38. Which technique is commonly used for thedetection and quantification of DNA?

a) PCR

b) Gel electrophoresis

c) Western blotting

d) DNA microarray

39. What is the primary use of "moleculardiagnostics" in biotechnology?

a) To diagnose genetic disorders anddiseases

b) To produce recombinant proteins

c) To clone genes

d) To sequence genomes

40. Which biotechnological application involves the use of microbes to synthesize pharmaceuticals?

a) Industrial biotechnology

b) Gene therapy

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a) DNA sequencing

b) PCR

c) Genetic Enginering

d) Gel electrophoresis

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g) Higher crop prices

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b) To produce recombinant proteins

c) To clone genes

d) To sequence genomes

45. Which biotechnological application involves the use of microbes to synthesize pharmaceuticals?

a) Industrial biotechnology

b) Gene therapy

c) PCR

d) DNA sequencing

41. What is the purpose of "gene editing" inbiotechnology?

a) To modify specific genes in an organism'sgenome

b) To sequence entire genomes

c) To clone genes

d) To produce recombinant proteins

42. Which of the following is a biotechnologyapplication used to improve crop yields?

a) Genetic modification

b) Gene therapy

c) PCR

d) DNA sequencing

43. What is the main role of "biotransformation" in biotechnology?

a) To sequence DNA

b) To produce recombinant proteins

c) To modify chemical compounds usingbiological systems

d) To clone genes

44. Which technique is used to producegenetically modified animals?

a) Gene editing

b) PCR

c) Gel electrophoresis

d) Recombinant DNA technology

45. What is the purpose of using "biologicalsensors" in biotechnology?

a) To detect specific biological Genones

b) To produce pharmaceuticals

c) To detect specific biological molecules

d) To clone genes

46. Which biotechnology application involvesthe use of microbes to decompose organicwaste?

a) PCR

b) Gene therapy

c) Recombinant DNA technology

d) Bioremediation

47. What is the role of "synthetic biology" inbiotechnology?

a) To design and construct new biologicalparts and systems

b) To sequence DNA

c) To clone genes

d) To produce recombinant proteins

48. Which process is used to develop genetically modified plants with specific traits?

a)PCR

b) Genetic engineering

c) DNA sequencing

d) Gel electrophoresis

49. What is the main advantage of using "microbial fermentation" in biotechnology?

a) To produce a variety of products including pharmaceuticals and biofuels

b) To clone genes

c) To sequence DNA

d) To produce vaccines

50. Which biotechnology application is used forimproving agricultural productivity?

a) Genetic modification of crops

b) PCR

c) DNA sequencing

d) Gel electrophoresis

1	2	3	4	5
C	B	A	C	B

6	7	8	9	10
B	A	A	B	A
11	12	13	14	15
B	A	A	A	A
16	17	18	19	20
D	A	A	A	D
21	22	23	24	25
A	A	D	A	A
26	27	28	29	30
D	A	A	A	C
31	32	33	34	35
A	A	A	B	B
36	37	38	39	40
A	B	A	A	A
41	42	43	44	45
A	A	C	A	C
46	47	48	49	50
D	A	B	A	A