

Chapter-12 Applications of Biotechnology

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BIOTECHNOLOGY AND ITS APPLICATIONS.

NEET QUESTIONS

1. Insect resistant transgenic cotton has been produced by inserting a piece of DNA from
- An insect
 - A bacterium**
 - A wild relative of cotton
 - A virus

Ans: b

2. Hybridoma technology has been successfully used in
- Production of somatic hybrids antibiotics
 - Synthesis of monoclonal**
 - Synthesis of haemoglobin
 - production of alcohol in bulk

Ans: b

3. During "gene cloning" which is called as "gene taxi"?
- Vaccine
 - Plasmid**
 - Bacterium
 - Protozoa

Ans: b

4. Name the drug used in cancer treatment produced by using biotechnology
- Terramycin
 - HGH
 - . Interferon**
 - TSH

Ans: c

5. Cultivation of Bt cotton has been much in the news. The prefix Bt means
- "Barium treated" cotton seeds
 - "Bigger thread" variety of cotton with better tensile strength
 - Produced by "Biotechnology" using restriction enzymes and ligases
 - Carrying an endotoxin gene from *Bacillus thuringiensis*

Ans: d

6. The first antibiotic was discovered by.....
- Louis Pasteur
 - R.Koch
 - W.Fleming
 - A.Fleming

Ans: d

7. In transgenics, expression of transgene in target tissues is determined by
- Transgene
 - Promoter
 - Reporter
 - Enhancer

Ans: b

8. Terminator gene
- Help in terminating flowering
 - Help in terminating seed germination
 - Used in hybridization
 - None of these

Ans: b

9. First biochemical to be produced commercially by microbial cloning and genetic engineering
- Human insulin
 - Penicillin
 - Interferons
 - Fertility factor

Ans: a

10. Golden rice is a transgenic crop of the future with the following improved trait

- a. Insect resistance
- b. High lysine content
- c. High protein content
- d. High vitamin-A content

Ans: d

11. Bacillus thuringiensis (Bt) strains have been used for designing novel

- a. Biofertilizers
- b. Bio-metalurgical techniques
- c. Bio-mineralization process
- d. Bio-insecticidal plants

Ans: d

12. Which of the following is a correct statement

- a. "Bt" in "Bt-cotton" indicates that it is a genetically modified organisms produced through biotechnology
- b. Somatic hybridization involves fusion of two complete plant cells carrying desired genes
- c. The anticoagulant hirudin is being produced from transgenic Brassica napus seed
- d. "FlavrSavr" variety of tomato has enhanced the production of ethylene which improves its taste

Ans: c

13. Which bacteria is used as biopesticide first on the commercial scale in the world?

- a. Bacillus thuringiensis
- b. E.coli
- c. Pseudomonas aeruginosa
- d. Agrobacterium tumefaciens

Ans: a

14. Gene recombinant technology is used for

- a. Vector less gene transfer into target cell
- b. Vector based gene transfer into target cell
- c. Direct transfer of DNA protein complex
- d. Liposome base direct gene transfer into target cell

Ans: b

15. Transfer of DNA bands from an agrose gel to a nitrocellulose or nylon membrane is referred to as
- a. Western transfer
 - b. Northern transfer
 - c. Eastern transfer
 - d. Gene transfer
 - e. Southern transfer

Ans: e

16. Golden rice is a promising transgenic crop. When released for cultivation, it will help in
- a. Producing a petrol-like fuel from rice
 - b. Alleviation of vitamin A
 - c. Pest resistance
 - d. Herbicide tolerance

Ans: b

17. A genetically engineered micro-organism used successfully in bioremediation of oil spills is a species of
- a. Trichoderma
 - b. Xanthomonas
 - c. Bacillus
 - d. Pseudomonas

Ans: d

18. Blindness is prevented by use of which crop in poor countries?
- a. Golden rice
 - b. Wheat
 - c. Gram
 - d. Pea

Ans: a

19. Human insulin is being commercially produced from a transgenic species of
- a. Rhizobium
 - b. Saccharomyces
 - c. Escherichia

d. mycobacterium

Ans: c

20. A transgenic food crop which may help in solving the problem of night blindness in developing countries is

a. Bt soybean

b. Golden rice

c. FlavrSavr tomatoes

d. Starlink maize

Ans: b

21. Main objective of production/use of herbicide resistant GM crops is to

a. Encourage eco-friendly herbicides

b. Reduce herbicide accumulation in food articles for health safety

c. Eliminate weeds from the field without the use of manual labour

d. Eliminate weeds from the field without the use of herbicide

Ans: b

22. Genetically engineered bacteria are being employed for production of

a. Thyroxine

b. Human insulin

c. Cortisol

d. Epinephrine

Ans: a

23. Isolation of Bt gene from bacterium (*Bacillus thuringiensis*) was taken up in the year

a. 1977

b. 1980

c. 1997

d. 1998

Ans: b

24. Which one of the following is commonly used in transfer of foreign DNA into crop plants?

a. *Meloidogyne incognita*

b. *Agrobacterium tumefaciens*

c. *Penicillium expansum*

d. *Trichoderma reesei*

Ans: b

25. What is true about Bt toxin?

- a. Bt toxin exists as active toxin in the Bacillus.
- b. The activated toxin enters the ovaries of the pest to sterilise it and thus prevents its multiplication.
- c. The concerned Bacillus has anti toxin
- d. The inactive prototoxin gets converted into active form in the insect gut

Ans: d

26. Transgenic plants are the ones

- a. Generated by introducing foreign DNA into a cell and regenerating a plant from the cell
- b. Produced after protoplast fusion in artificial medium
- c. Grown in artificial medium after hybridization in the field.
- d. Produced by a somatic embryo in artificial medium

Ans: a

27. The bacteria Bacillus thuringiensis is widely used in contemporary biology as

- a. Insecticide
- b. Agent for production of dairy products
- c. Source of industrial enzyme
- d. Indicator of water pollution

Ans: a

28. Golden rice is

- a. A variety of rice grown along the yellow river in china
- b. Long stored rice having yellow colour tint
- c. A transgenic rice having gene for β -carotene
- d. Wild variety of rice with yellow coloured grains

Ans: c

29. In RNAi, genes are silenced using

- a. ss DNA
- b. ds DNA
- c. ds RNA
- d. ss RNA

Ans: c

30. The first clinical gene therapy was done for the treatment of
- a. AIDS
 - b. Cancer
 - c. Cystic fibrosis
 - d. SCID

Ans: b

31. ADA is an enzyme which is deficient in a genetic disorder SCID. What is the full form of ADA?
- a. Adenosine deoxyaminase
 - b. Adenosine deaminase
 - c. Aspartate deaminase
 - d. Arginine deaminase

Ans: b

32. Silencing of a gene could be achieved through the use of
- a. Short interfering RNA(RNAI)
 - b. Antisense RNA
 - c. By both
 - d. None of the above

Ans: c

33. Silencing of m-RNA has been used in producing transgenic plants resistant to
- a. Bollworms
 - b. Nematodes
 - c. White rusts
 - d. Bacterial blights

Ans: b

34. The first clinical gene therapy was given for treating
- a. Diabetes mellitus
 - b. Chicken pox
 - c. Rheumatoid arthritis
 - d. Adenosine deaminase deficiency

Ans: a

35. Tobacco plants resistant to a nematode have been developed by the introduction of DNA that produces in the host cell)
- a. Both sense and anti-sense RNA
 - b. A particular hormone
 - c. An antifeedant
 - d. A toxin protein

Ans: a

36. Amplification of gene of interest by using DNA polymerase may go upto
- a. 0.1 million times
 - b. 1.0 million times
 - c. 1.0 billion times
 - d. 1.0 trillion times

Ans: c

37. Which of the following Bt crops is being grown in India by the farmers?
- a. Cotton
 - b. Brinjal
 - c. Soybean
 - d. Maize

Ans: a

38. The first human hormone produced by recombinant DNA technology is
- a. Insulin
 - b. Estrogen
 - c. Thyroxin
 - d. Progesterone

Ans: a

39. An analysis of chromosomal DNA using the hybridization technique does not use
- a. Electrophoresis
 - b. Blotting
 - c. Autoradiography
 - d. PCR

Ans: d

40. Bt cotton is not:
- a. A GM plant
 - b. Insect resistant
 - c. A bacterial gene expressing system
 - d. Resistant to all pesticides

Ans: d

41. C-peptide of human insulin is:
- a. A part of mature insulin molecule
 - b. Responsible for formation of disulphide bridges
 - c. Removed during maturation of pro-insulin to insulin
 - d. Responsible for its biological activity.

Ans: c

42. GEAC stands for:
- a. Genome Engineering Action Committee
 - b. Ground Environment Action Committee
 - c. Genetic Engineering Approval Committee
 - d. Genetic and Environment Approval committee

Ans: c

43. α -1 antitrypsin is:
- a. An antacid
 - b. An enzyme
 - c. Used to treat arthritis
 - d. Used to treat emphysema

Ans: d

44. The site of production of ADA in the body is:
- a. Bone marrow
 - b. Lymphocytes
 - c. Blood plasma
 - d. Monocytes

Ans: b

45. A protoxin is:
- a. A primitive toxin
 - b. A denatured toxin
 - c. Toxin produced by protozoa
 - d. Inactive toxin

Ans: d

46. The trigger for activation of toxin of *Bacillus thuringiensis* is:
- a. Acidic pH of stomach
 - b. High temperature
 - c. Alkaline pH of gut
 - d. Mechanical action in the insect gut

Ans: c

47. In RNAi, genes are silenced using:
- a. ss DNA
 - b. ds DNA
 - c. ds RNA
 - d. ss RNA

Ans: c

48. 'Molecular scissor' used in genetic engineering is
- a. Restriction endonuclease
 - b. DNA polymerase
 - c. DNA ligase
 - d. Helicase

Ans: a

49. Plants are genetically engineered with novel genes by
- a. Embryo rescue technique
 - b. Recombination breeding
 - c. Protoplast fusion
 - d. Recombinant DNA technology

Ans: d

50. Maximum application of animal culture technology today is in the production
- a) Insulin
 - b) Interferons
 - c) Edible proteins
 - d) Vaccines.

Ans: d

From Rajesh Kumar Principal, KV, Devlali