



BIOLOGY

BOOKS - CENGAGE BIOLOGY

(ENGLISH)

BIOTECHNOLOGY AND ITS APPLICATIONS

Exercises Choose The Correct Options

1. Which one of the following can be used as a permanent cure for ADA deficiency?

A. Bone marrow transplantation on detection of disorder

B. Enzyme replacement therapy at any point in life

C. Both (1) and (2)

D. Gene therapy at early embryonic stages.

Answer: D



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2. Which one of the following is a transgenic product useful for treatment of Haemophilia?

- A. Factor VIII
- B. Antithrombin II
- C. α -1- antitrypsin
- D. Lysostaphin

Answer: A



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3. Who is responsible for obtaining interferons through recombinant DNA technique?

A. A.R.Bounting

B. Eli Lily

C. Charles Weissmann

D. A. Tiselius

Answer: C



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4. Select the correct statement:

A. A. RNAi silencing takes place in all eukaryotic organisms as method of cellular defense.

B. B. RNAi requires silencing of mRNA by binding of complementary ssDNA molecule.

C. C. Complementary nucleic acid could be form from mobile genetic elements

(transposons).

D. D. Ti plasmid with nematode-specific genes has been used in RNAi.

Answer: B



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5. Which gene controls transcription of chain A and chain B required for humulin synthesis in E. coli?

A. β - Lactamase

B. β -Galactosidase

C. Polygalacturonase

D. Chitinase

Answer: B



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6. Transgenic *Brassica napus* has been used for the synthesis of:

A. Hirudin

B. Herparin

C. Polgalacturonase

D. Cry protein

Answer: A



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7. Which genes encode the protein to control bollworms infection in cotton plants?

A. Cry II Ab

B. Cry I Ac

C. Both (1) and (2)

D. *Amp^r*

Answer: C



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8. Which is incorrect with respect to GM food?

- A. It contains the protein produced by the transgene in question .
- B. GM food contains antibiotic resistance gene itself.
- C. The enzyme produced by antibiotic resistance gene will not cause allergies.
- D. The bacteria in gut of humans could take by antibiotic resistance gene.

Answer: C



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9. Golden rice - a transgenic variety of rice - is principally richer than normal rice in

A. Cry I Ab

B. Hirudin

C. TPA

D. β - carotene

Answer: D



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10. Southern blotting cannot be performed without

A. Restriction endonucleases

B. Agarose

C. Monoclonal antibodies

D. Both (1) and (2)

Answer: D



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11. Plants, bacteria, fungi, and animals whose genes have been altered by manipulated are called genetically modified organisms (GMO).

Which of the following statement is not applicable to GM plants?

- A. Reduced reliance on chemical pesticides
- B. Prevent early exhaustion of fertility of soil.
- C. Crops less tolerant to abiotic stress (cold, drought, salt, and heat).
- D. Enhanced nutritional value of food.

Answer: C



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12. In the case of *Bacillus thuringiensis* ,
Bacillus itself is not killed by toxic protein
crystals produced by it because

A. *Bt* toxin protein is not produced in

Bacillus

B. *Bt* toxin protein is produced in very less

amount in *Bacillus*

C. Bt toxin exists as inactive toxin

D. Bt toxin cannot cause any damage to
Bacillus

Answer: C



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13. Bt toxin kills the insect by

A. Blocking nerve conduction

B. Damaging the surface of trachea

C. Creating pores in the tracheal system

D. Creating pores in the mid gut

Answer: D



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14. Which of the following cry gene codes for a protein which can control the cotton bollworms?

A. cry I Ac

B. Cry II Ab

C. Cry I Ab

D. cry II Ac

Answer: C



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15. RNA interference (RNAi) technique has been devised to protect the plants from the nematode. In this technique , mRNA, of

nematode, is silenced by _____

produced by the host plant :

A. dsDNA

B. ssDNA

C. dsRNA

D. Target proteins

Answer: C



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16. Which of the following peptide chain is removed during maturation of pro-insulin into insulin ?

A. A peptide

B. B peptide

C. C peptide

D. A and C peptides

Answer: C



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17. Eli Lilly, an American company prepared two DNA sequences corresponding to A and B, chains of human insulin, and introduced them in plasmids of E. Coli to produce insulin chains. Chains A and B were produced separately, extracted and combined by creating

A. Peptide bonds

B. Ionic bonds

C. H-bonds

D. Disulfide bonds

Answer: D



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18. The first clinical gene therapy was given in 1990 to a 4 years old with enzyme deficiency of

A. Adenosime deamine

B. Tryosime oxides

C. Monamine oxides

D. Glutamate dehydrogenase

Answer: A



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19. Which of the following could be a premanent cure for treatment of severe combined immunodeficiency (SCID)?

- A. Bone marrow transplantation
- B. Enzyme replacment therapy
- C. Both (1) and (2)
- D. Gene therapy

Answer: D



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20. Which of the following technique is being used to detect mutation in genes in suspected cancer patients?

A. PCR

B. ELISA

C. Blood analysis

D. PAGE

Answer:



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21. Animal that have had their DNA manipulated to possess and express an extra gene known as

- A. Foreign animals
- B. Superoir animals
- C. Transgenic animals
- D. Intergenic animls

Answer: C



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22. About 95% of all existing transgenic animals are _____ .

A. Rabbits

B. Pigs

C. Cows

D. Mice

Answer: D



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23. Today, transgenic models exist for many human diseases which includes.

A. Cancer .

B. Cystic fibrosis .

C. Rheumatoid arthritis

D. Alzheimer's diseases.

A. (A) and (C) only

B. (B) and (C) only

C. (A) and (B), and (C) only

D. All of these

Answer: D



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24. Which of the following is not a true statement with respect to Bt cotton?

- A. Bt toxin is produced by a bacterium *Bacillus thuringiensis*.
- B. It is an example of biopesticide.
- C. Bt toxin gene has been cloned in the plants to provide resistance to insects.
- D. Bt cotton could decrease the amount of pesticide used.

Answer: C



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25. How many recombinant therapeutics have been approved for human use all over the world?

A. 12

B. 30

C. 20

D. 18

Answer: B



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26. Which of the following techniques serve the purpose of early diagnosis than most conventional methods of diagnosis?

A. Recombinant DNA technology

B. PCR

C. ELISA

A. (A) only

B. (A) and (C) only

C. (A) and (B) only

D. All of these

Answer: D



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27. Which of the following is based upon the principle of antigen - antibody interaction?

A. PCR

B. ELISA

C. Recombinant DNA technology

D. RNA interference

Answer: B



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28. Which of the following transgenic human protein product has been used to treat emphysema ?

A. α -1-Antitrypsin

B. α - Lactalbumin

C. Cry protein

D. C-peptide

Answer: A



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29. How many varieties of rice has been estimated to be present in India?

A. 2000

B. 20000

C. 2,00,000

D. 20,00,000

Answer: C



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30. The use of bioresources by multinational companies and other organisations without proper authorisation from the countries and people concerned without compensatory payment is called

A. Bioethic

B. Biopiracy

C. Bioterror

D. Bioweapon

Answer: B



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31. Amongst the following, which characteristic feature is not applicable to Bt cotton?

A. Bt is the abbreviated term for botulinum toxin.

B. Such cotton is resistant to armyworms and beetles.

C. The toxin is activated in the body of the insect.

D. The toxin is coded by a gene called "cry".

Answer: A



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32. Which biotechnology company is credited with the synthesis of genetically engineered human insulin for the first time?

A. Celera genomics

B. Cipla

C. Eli Lilly

D. Ranabaxy

Answer: C



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33. Even though the highest number of varieties of this rice are found in India. Which variety of rice was patented by U.S. company?

A. Shamati Sonarn

B. Co-667

C. Basmati

D. Lerma Roja

Answer: C



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34. Which step has been taken by Government of India to cater to the requirement of patent terms and other emergency provisions in this regard ?

A. Biopiracy Act

B. Indian Patents Bill

C. RTI Act

D. Negotiable Instruments Act

Answer: B



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35. What is another term used for GMO (genetically modified organisms)?

- A. Cybrid organism
- B. Genomorphic organisms
- C. Transgenic organisms
- D. Conjoined twins

Answer: C



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36. Transgenic models can be used to investigate several human diseases such as

A. Alzheimer's disease

B. Cystic fibrosis

C. Carcinoma

D. All of these

Answer: D



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37. Which GMO is now being developed in order to be used in testing the safety of polio vaccines before to be used in human ?

- A. Transgenic sheep
- B. Transgenic cow
- C. Transgenic mice
- D. Transgenic viruses

Answer: C



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38. Which method of cellular defence is common in almost all eukaryotic organisms ?

- A. RNA interference
- B. Reverse transcription
- C. VNTR
- D. Phagocytosis

Answer: A



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39. "Silencing" of mRNA molecule in order to control the production of a harmful protein has been used in the protection of plants from

A. Nematodes

B. Beetles

C. Mosquitoes

D. Flies

Answer: A



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40. Mark the odd one with respect to the advantages of genetically modified plants:

A. Production of food with better nutritional value.

B. Decrease in post harvest losses.

C. Decreased dependence on fertilizers.

D. Decreased usage of minerals

Answer: D



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41. In which disease has the advantages of genetic engineering still not been used as clinical cure?

- A. Emphysema
- B. Cystic fibrosis
- C. Phenylketonuria
- D. Anencephaly

Answer: D



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42. Which substance is tested in case of toxicity/safety testing using transgenic animals?

A. Chemicals

B. Pathogen

C. The amount of DNA in the cell

D. The amount of tolerable radiation levels of an organism

Answer: A



43. Which step proved to be the main challenging obstacle in the production of human insulin by genetic engineering?

- A. Removal of C-peptide from active insulin.
- B. Getting insulin assembled into a mature form.
- C. Addition of C-peptide to pro-insulin.
- D. Splitting A and B polypeptide chains.

Answer: B



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44. Disadvantage of using porcine insulin in diabetic patients

- A. It leads to hypercalcaemia.
- B. It may cause allergic reactions.
- C. It is expensive.

D. It can lead to mutation in human recipients.

Answer: B



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45. Why is repeated transfusions of genetically engineered cells required in SCID patients?

A. The transfused cells have limited lifespan.

B. The introduced gene is mutated.

C. The enzyme required is degraded after
20 days of transfusion.

D. Both (2) and (3).

Answer: A



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46. Which of the Indian plants have either been patented or attempts have made to

patent them by western nations for their commercial use?

A. Basmati rice

B. Turmeric

C. Neem

D. All of these have been targeted

Answer: D



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47. Why is usually insulin not administered orally to a diabetic patient?

A. Insulin is bitter in taste.

B. Insulin is a peptide.

C. Insulin will lead to a sudden decrease in blood sugar if given orally.

D. Insulin leads to peptic ulcer orally.

Answer: B



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48. Which technique would you expect to be completely curative in SCID ?

- A. Gene therapy in adult stage.
- B. Gene therapy in embryonic stage.
- C. Bone marrow transplantation.
- D. Enzyme replacement therapy.

Answer: B



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49. A doctor while operating on an HIV (+)ve patient accidentally cuts himself with a scalpel. Suspecting himself to have contracted the virus which test will he take to rule out/confirm his suspicion ?

A. PCR

B. Routine urine examination

C. TLC

D. DLC

Answer: A



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50. Match the following genes in column I with the insects that can be protected from with their coded proteins in column II.

Column I

Column II

a. cry I Ac

(i) cotton bollworm

b. cry I Ab

(ii) Beetles

c. Bt toxin gene

(iii) Corn borer

A. a-(i),b-(iii),c -(ii)

B. a-(ii), b-(i), c-(iii)

C. a-(i),b-(ii),c-(iii)

D. a-(ii),b-(iii),c-(i)

Answer: A



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51. E.coli are used in the production of

A. Rifampicin

B. LH

C. Ecdysone

D. Interferon

Answer: D



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52. Rosie' a transgenic cow is known to produce a type of milk which has all the following characteristics, except

A. Protein content of 2.4 g/L

B. Has human α -lactalbumin

C. More balanced diet than normal cow milk for babies

D. Was produced for the first time in 2001.

Answer: D



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53. According to the latest estimates. How many documented varicties of Basmati rice are grown in india?

A. 30

B. 27

C. 118

D. 125

Answer: B



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54. Which ingredient was present in higher concentration in GM rice as compared to the usual rice?

A. Protein content of 2.4 g/L

B. Carbohydrates

C. Na^+ ions

D. Vitamin A

Answer: D



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55. Which of the following cannot be achieved using PCR?

A. Detect HIV in ADIS suspect.

B. Detect mutations in cancer patients.

C. Detect antigen-antibody interaction

D. Detect specific microorganisms from soil.

Answer: C



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56. In electrophoresis, the separation of DNA fragment is based on

A. Charge

B. Mass only

C. Size

D. Both (1) and (3)

Answer: D



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57. Pick the odd one out:

A. DNA microinjection

B. RNA interference

C. Retro virus mediated gene transfer

D. Embryonic stem cell mediated gene transfer

Answer: B



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58. In xenotransplantation, a protein that causes graft rejection usually comes from transgenic

A. Cow

B. Mice

C. pig

D. Sheep

Answer: C



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59. Transgenics have provided many pharmaceuticals in their milk, for treatment

of diseases. Which one of the following has not been a successful story?

A. Phenylketonuria

B. SCID

C. Emphysema (hereditary)

D. CFTR

Answer: B



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60. Which is not true w.r.t transgenic animals and their contribution to human welfare?

A. Transgenic mice are being tested to ensure safety of polio vaccine.

B. Rosic's milk contained human gene insulin.

C. Transgenic cows produce milk with less lactose.

D. Transgenic sheep grow more wool.

Answer: B



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61. An antibacterial compound that prevents mastitis in cows is

A. α -1-Antitrypsin

B. Lysostaphin

C. Lysozyme

D. Alginate lyase

Answer: B



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62. Choose the incorrect statement with respect to bioweapons:

A. They are low-cost weapons.

B. They cause more casualties than conventional weapons.

C. They are extremely difficult to detect

D. Bacterium E.coli created letter scare in
2001.

Answer: D



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63. A set of standards by which a community regulates its behaviour and activities in relation to the biological world is termed as

A. Biopatent

B. Biopiracy

C. Patent

D. Bioethic

Answer: D



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64. Nexia biotechnologies spliced spider genes into the cells of lactating

A. Cow

B. Sheep

C. Goat

D. None of these

Answer: C



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65. Nif' gene for nitrogen fixation in cereal crops like wheat jowar etc., is introduced by cloning

A. *Rhizobium meliloti*

B. *Bacillus thuringiensis*

C. *Rhizopus*

D. *Rhizophora*

Answer: C



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66. VNTRs represent

A. New terminal regions in DNA

B. Function genes in DNA

C. Split genes in sample DNA

D. Specific non-coding sequences with
unique tandem repeats

Answer: D



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67. Sheep Dolly was genetically similar to

- A. The mother from which nucleated fertilized egg was taken
- B. The mother from which the nucleus of udder cell was taken
- C. The surrogate mother
- D. Both surrogate mother and nuclear donor mothe

Answer: B



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68. How does a bacterial cell protect its own DNA from restriction enzymes?

- A. By adding methyl groups to adenines and cytosines
- B. By reinforcing bacterial DNA structure with covalent phosphodiester bonds
- C. By adding histones to protect the double-stranded DNA
- D. By forming "sticky ends" of bacterial DNA to prevent the enzyme from attaching.

Answer: A



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69. All cells contain the same genetic information .Why cannot cells other than stem cells differentiate into various tissues?

A. As cell develop, their genetic makeup changes.

B. Stem cells are the only cells that can be implanted.

C. Stem cells are the only cells that do not have an X or Y chromosome and can, therefore, go into either a male or a female.

D. As cells develop, some genes are turned off permanently.

Answer: D



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70. Polymerase chain reaction technology (PCR -technique) is used for

- A. DNA identification
- B. DNA repair
- C. DNA amplification
- D. Cleave DNA

Answer: C



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71. Golden rice is a promising transgenic crop.

When released for cultivation, it will help in

- A. Alleviation of vitamin A deficiency
- B. Pest resistance
- C. Herbicide tolerance
- D. Producing a petrol-like fuel form rice

Answer: A



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72. When the genotype of an organism is improved by the addition of foreign gene, the process is called

- A. Tissue culture
- B. Genetic diversity
- C. Genetic engineering
- D. Plastic surgery

Answer: C



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73. A genetically manipulated organism containing in its genome one or more inserted genes of another species is called

- A. Transposon
- B. Gene expression
- C. Transgenic organisms
- D. Retrotransposon

Answer: C



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74. Use of transgenic plants as biological factories for the production of special chemical is called

- A. Molecular farming
- B. Molecular genetic
- C. Molecular mapping
- D. Dry farming

Answer: A



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

A. Plasmids of *B. subtilis*

B. Bacteriophages

C. Ti plasmids of *Agrobacterium*

D. *E. coli* phage

Answer: C



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76. The tumour inducing capacity of *Agrobacterium tumefaciens* is located in large extrachromosomal plasmids called :

- A. Ti plasmid
- B. Ri plasmid
- C. Lambda phage
- D. Plasmid pBR322

Answer: A



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77. Genetic engineering aims at:

A. Destroying wild gene

B. Preserving defective gene

C. Curing human disease by introducing
new gene (hemophilia)

D. All these above

Answer: C



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78. Taq polymerase enzyme is used in

A. Hydridoma technique

B. PCR technique

C. Gene cloning

D. rDNA technology

Answer: B



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79. DNA fragments separated by gel electrophoresis are shown. Mark the correct statement:



- A. Band 3 contains more positively charged DNA molecules than band 1
- B. Band 3 indicates more charge density than bands 1 and 2
- C. Band 1 has longer DNA fragment than bands 2 and 3.

D. All bands longer DNA equal length and charges but differ in base composition .

Answer: C



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80. Thermal cycle takes place in which technique

A. Gel electrophoresis

B. PCR technique

C. Centrifugation

D. Southern blotting

Answer: B



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81. Cry-gene which synthesizes crystal protein isolated from:

A. *Bacillus thuringiensis*

B. *Rhizobium*

C. Bacillus polymyxa

D. Clostridium

Answer: A



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82. Which of the following risks are associated with genetically modified foods ?

A. Toxicity

B. Allergic reactions

C. Antibiotic resistnace in microorganisms

present in alimentray canal

D. All of the above

Answer: D



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83. PCR-technique is used in

A. Production of transgenic microbes

B. Production of genetically modified food

C. Forensic investigation

D. rDNA technique

Answer: C



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84. TDF gene is a

A. Gene present on X-chromosome

B. Segment of RNA

C. Proteinaceous factor

D. Gene present on Y-chromosome

Answer: D



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85. BACs and YACs are:

A. Natural DNA obtained from bacteria and yeast

B. Useful vectors for eukaryotic gene transfer

C. Artificial DNA obtained from bacteria and yeast

D. Both (2) and (3).

Answer: D



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86. The first clinical gene therapy was done for the treatment of

A. Albinism

B. Hemophilia

C. SCID

D. LIQID

Answer: C



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87. DNA probe is used for

A. DNA fingerprinting

B. Detectction of pathogeni bacteria

C. Medical genetics to find whether a person carries a particular gene or not

D. All of the above

Answer: D



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88. Bt cotton is resistant to

A. Roundworm

B. Flukeworm

C. Bollworn

D. Pinworn

Answer: C



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89. A genetically engineered bacteria used for clearing oil spills is

A. Pseudomons

B. Trichoderma

C. Xanthomonas

D. Bacillus

Answer: A



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90. Cultivation of Bt cotton has been much in the news. The prefix "Bt" means

A. 'Barium-treated" cotton seeds

- B. 'Bigger thread " variety of cotton with better tensile strength
- C. Produced by "biotechnology" using restriction enzyme and ligase
- D. Carrying an endotoxin gene from *Bacillus thuringiensis*.

Answer: D



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91. An example of gene therapy is

A. Production of injected hepatitis B

vaccine

B. Production of vaccines in food crops

such as potatoes which can be eaten

C. Introduction of gene for adenosine

deaminase in person suffering from

severe combined immunodeficiency (SCID).

D. Production of test-tube babies by artificial insemination and implantation of fertilized eggs

Answer: C



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92. The bacteria *Pseudomonas* is useful because of its ability to

A. Transfer genes from one plant to another

B. Decompose a variety of organic compounds

C. Fix atmospheric nitrogen in the soil

D. Produce a wide variety of antibiotics

Answer: B



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93. The approximate number of genes contained in the genome of Kalpana Chawla was

A. 40000

B. 30000

C. 80000

D. 1,00,000

Answer: B



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94. The tumor-inducing capacity of *Agrobacterium tumefaciens* is located in large extrachromosomal plasmid called

A. Ti plasmid

B. Ri plasmid

C. Recombinant plasmid

D. Shine -Dalgarno sequence

Answer: A



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95. Transgenic crops are modified through genetic engineering to develop natural resistance to insect pests. Which of these pairs consists of transgenic crops ?

- A. Tobacco and cotton
- B. Tomato and rice
- C. Maize and sugarcane
- D. Tomato and wheat

Answer: A



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96. Genetically engineered human insulin is called

A. Humulin

B. Haematin

C. Hydriodama

D. Hybrid

Answer: A



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97. Abzymes are

- A. Abnormal enzymes
- B. Enzymes acting on antibodies
- C. Antibodies acting as enzymes
- D. All of these

Answer: C



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98. Hybridoma technology was developed by

A. Taggart, 1982

B. Price and Saxton, 1987

C. Vitella et. Al., 1982

D. Kohler and Milstein

Answer: D



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99. The technique for monoclonal antibody production was discovered by

- A. Steward and Skoog
- B. Arban and Harberlam
- C. Kohler and Milstein
- D. Lister and Koch

Answer: C



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100. The first transgenic plant developed was a

- A. Potato
- B. Tomato
- C. Tobacco
- D. Maize

Answer: A



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101. Dolly sheep was obtained by

A. Cloning the udder cell (somatic cell)

fused with enucleated oocyte

B. Cloning of gametes

C. Tissue culture

D. None

Answer: B



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102. A gaint rat is formed in the laboratory.

What is the reason ?

- A. Gene mutation
- B. Gene sythesis
- C. Gene manipulation
- D. Gene replication

Answer: C



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103. The first cloned animals was

A. Dolly sheep

B. Polly sheep

C. Molly sheep

D. Dog

Answer: A



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104. Introduction of food plants developed by genetic engineering is not desirable because:-

A. Economy of developing countries may

suffer

B. These products are less tasty as

compared to the already existing

products

C. This method is costly

D. There is danger of introduction of viruses and toxins with introduced crop.

Answer: D



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105. Which of the following bacteria has found extensive use in genetic engineering work in plants ?

A. *Bacillus cocagular*

B. *Agrobacterium tumefaciens*

C. *Clostridium septicum*

D. *Xanthomonas citri*

Answer: B



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106. Maximum application of animal cell culture technology today is in the production of : -

A. Vaccines

B. Edible protein

C. Insulin

D. Interferon

Answer: A



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107. The Ti plasmid is often used for making transgenic plants. This plasmid is found in

A. Yeast as a 2-mm plasmid

B. Azotobacter

C. Rhizobium of the roots of leguminos
plants

D. Agrobacterium

Answer: D



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108. In transgenics, expression of transgene in target tissue is determined by

A. Reporter

B. Enhance

C. Transgene

D. Promoter

Answer: A



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

- A. Bioinsecticidal plants
- B. Bio-mineralization process
- C. Biofertilizers
- D. Bio-metallurgical techniques

Answer: A



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110. Which one of the following is a correct statement?

A. 'BT' in BT-cotton indicates that it is a genetically modified organism produced by biotechnology.

B. Somatic hybridization involves the fusion of two complete plant cells carrying desired genes.

C. The anticoagulant hirudin is being produced from transgenic Brassica napus seeds.

D. 'Flavr Savr' variety of tomato has enhanced the production of ethylene which improves its taste.

Answer: B



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Exercises Assertion Reasoning Questions

1. A : RNAi takes place in all eukaryotic organisms as a method of cellular defense.

R : Complementary dsRNA molecule binds to specific mRNA and prevents its translation (silencing).

A. If both Assertion and Reason are true but the reason is the correct explanation of the assertion.

B. If both Assertion and Reason are true
but the reason is not the correct
explanation of the assertion

C. If Assertion and Reason in false

D. If both Assertion and Reason are false

Answer: B



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2. A : Bt toxin are protein crystals containing insecticidal protein

R : *B. thuringiensis* forms these protein crystals throughout continuously during their growth period.

A. If both Assertion and Reason are true but the reason is the correct explanation of the assertion.

B. If both Assertion and Reason are true but the reason is not the correct

explanation of the assertion

C. If Assertion and Reason is false

D. If both Assertion and Reason are false

Answer: C



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3. A : Recombinant DNA technologies process has been less effective in therapeutic drug production.

R : Recombinant therapeutics induce unwanted immunological responses.

A. If both Assertion and Reason are true but the reason is the correct explanation of the assertion.

B. If both Assertion and Reason are true but the reason is not the correct explanation of the assertion

C. If Assertion and Reason are false

D. If both Assertion and Reason are false

Answer: D



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4. A : Transgenic mice are being used to test the safety of the polio vaccine.

R : It could replace the use of monkeys to test the safety of batches of the vaccine.

A. If both Assertion and Reason are true but the reason is the correct explanation of the assertion.

B. If both Assertion and Reason are true
but the reason is not the correct
explanation of the assertion

C. If Assertion and Reason in false

D. If both Assertion and Reason are false

Answer: B



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5. A: Indian Government has set up organisation such as GEAC (Genetic Engineering Approval Committee), which will make decisions regarding the validity of GM research and safety of introducing GM organisms for public services.

R: Genetic modification of organisms can have unpredictable results when such organism are introduced into the ecosystem.

A. If both Assertion and Reason are true
but the reason is the correct explanation

of the assertion.

B. If both Assertion and Reason are true

but the reason is not the correct

explanation of the assertion

C. If Assertion and Reason are false

D. If both Assertion and Reason are false

Answer: A



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Archives Choose The Correct Options

1. 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 herbicides

Answer: C



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2. 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. Flaver Saver tomatoes

D. Starlink maize

Answer: B



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3. Transgenic plants are

A. Grown in artificial medium after

hybridization in the field

B. produce by a somatic embryo in artificial medium

C. Generated by introducing foreign DNA in to a cell and regenerating a plant from that cell

D. produce after protoplast fusion in artificial medium

Answer: C



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4. What is true about Bt toxin?

A. The concerned Bacillus has antitoxins

B. The inactive protoxin gets converted into active form in the insect gut

C. Bt protein exists as active toxin in the bacillus

D. The activated toxin enters the ovaries of the pest to sterilise it and thus prevent its multiplication.

Answer: B



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

- A. *Penicillium expansum*
- B. *Trichoderma harzianum*
- C. *Meloidogyne incognita*
- D. *Agrobacterium tumefaciens*

Answer: D



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6. Some of the characteristics of Bt cotton are

A. Long fibre and resistance to aphids

B. Medium yield, long fibre and resistance
to beetle pests

C. High yield and production of toxic
protein crystals which kill dipteran pests

D. High yield and resistance to bollworms

Answer: D



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7. Genetic engineering has been successfully used for producing

A. transgenic mice for testing safety of polio vaccine before use in humans

- B. transgenic models for studying new treatments for certain cardiac disease
- C. transgenic Cow-Rosie which produces high fat milk for making ghee
- D. Animals like bulls for farm work as they have super power

Answer: A



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8. The genetically-modified (GM) brinjal in India has been developed for

- A. Insect-resistance
- B. Enhancing shelf life
- C. Enhancing mineral content
- D. Drought-resistance

Answer: A



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9. Continuous addition of sugars in 'fed batch' fermentation is done to

- A. degrade sewage
- B. produce methane
- C. obtain antibiotics
- D. purify enzymes

Answer: C



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10. Maximum number of existing transgenic animals is of

A. Pig

B. Fish

C. Mice

D. Cow

Answer: C



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11. The most common substrate used in distilleries for the production of ethanol is

A. Molasses

B. Corn meal

C. Soyabean

D. Ground gram

Answer: A



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12. Consumption of which one of the following foods can prevent the kind of blindness associated with vitamin-A deficiency?

A. Golden rice

B. Bt.Brinjal

C. Flavor Savr Tomato

D. Canolla

Answer: A



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13. Tobacco plants resistant to a nematode have been developed by the introduction of DNA that produced (in the host cells)

A. Both sense and anti-sense RNA

B. A particular hormone

C. An antifeedant

D. A toxia protein

Answer: A



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14. The first clinical gene therapy was given for treating

- A. Diabetes mellitus
- B. Chicken pox
- C. Rheumatoid arthritis
- D. Adenosine deaminase deficiency

Answer: D



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15. Which of the following Bt crops is being grown in India by the farmers?

A. Cotton

B. Brinjal

C. Soyabean

D. Maize

Answer: A



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16. The first human hormone produced by recombinant DNA technology is

A. Insulin

B. Estrogen

C. Thyroxin

D. Progesterone

Answer: A



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17. Which body of the Government of India regulates GM research and safety of introducing GM organisms for public services?

A. Research Committee on Genetic Manipulation

B. Bio-safety committee

C. Indian Council of Agricultural Research

D. Genetic Engineering Approval Committee

Answer: D



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18. In Bt cotton, the Bt toxin present in plant tissue as pro-toxin is converted into active toxin due to

- A. present of conversation factors in insect gut
- B. alkaline pH of the insect gut
- C. acidic pH of the insect gut
- D. action of gut micro-organisms

Answer: B



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19. The crops engineered for glyphosate are resistant/tolerant to

A. Herbicides

B. Fungi

C. Bacteria

D. Insects

Answer: A



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20. The cutting of DNA at specific locations became possible with the discovery of

- A. Ligases
- B. Restriction enzymes
- C. Probes
- D. Selectable markers

Answer: B



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21. The two polypeptides of human insulin are linked together by

- A. Hydrogen bonds
- B. Phosphodiester bond
- C. Covalent bond
- D. Disulphide bridges

Answer: D



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