BIOLOGY

BOOKS - GR BATHLA & SONS BIOLOGY (HINGLISH)

BIOTECHNOLOGY : APPLICATION IN AGRICULTURE AND HEALTH

Multiple Choice Questions

1. The main technique involved in agricultural biotechnology is called :

A. Tissue culture

B. Plant breeding

C. Transformation

D. DNA replication

Answer: A

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2. An important objective of biotechnology in agricuture section is to:

A. increase plant weight

B. decrease seed number

C. increase nitrogen content

D. produce pest resistant varieties of plant

Answer: D

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3. Green revolution resulted in the great increase in production of food grains due to:

A. introduction of high-yielding varieties

B. use of pesticides to better management techniques

C. use of agrochemicals

D. all of the above

Answer: D

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4. Food production can be increased by:

A. genetically engineered crop-based agriculture

B. agro-chemical based agriculture

C. organic agriculture

D. all of the above

Answer: D

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5. Genetically modified organisms (GMO) have useful for:

A. making crops more tolerant to abiotic stresses

B. helping to reduce post-harvest losses

C. enhancing nutritional value of food

D. all of the above

Answer: D

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6. Which of the following is obtained from genetic engineering?

A. Glucose

B. Golden rice

C. Haemoglobin

D. None of these

Answer: B

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7. Which of the following has not been synthesized by DNA technology?

A. Insulin

B. Interferon

C. Haemoglobin

D. Somatostatin

Answer: C

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8. Golden rice is a promising transgenic crop. When released for cultivation , it will help in:

A. pest resistance

B. herbicide tolerance

C. alleviation of vitamin A deficiency

D. producing a petrol-like fuel from rice

Answer: C

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

A. Golden rice

B. Bt Soyabean

C. Starlink maize

D. Flavr Savr

Answer: A

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

A. insect resistance

B. high protein content

C. high vitamin A content

D. high lysine (essential amino acid) content

Answer: C

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11. An improved, variety of transgenic basmati rice:

A. gives high yield and is rich in vitamin A

B. gives high yield but has no characteristic aroma

C. does not require chemical fertilizers and growth hormones

D. is completely resistant to all insect pests and diseases of paddy

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. Canolla

B. Golden rice

C. Bt-Brinjal

D. Flavr Savr' tomato

Answer: B

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13. The problem of blindness in poor countries can be taken care of by using the following:

A. Transgenic maize

B. Bt-brinjal

C. Transgenic tomato

D. Golden rice

Answer: D

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14. A transgenic rice (Gloden rice) has been developed for increased content of:

A. Vitamin A

B. Vitamin B 1

C. Vitamin C

D. Vitamin D

Answer: A

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15. Vitamin A rich transgenic plant is:

A. Bt-Cotton

B. Golden Rice

C. V accinated potato

D. Flavr Savr Tomato

Answer: B

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16. Golden rice is a variety rich in:

A. biotin

B. Lysine

C. Vitamin C

D. β-carotene and ferritin

Answer: D

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17. Cultivation of Bt-cotton has been much in the news. The prefix "Bt" means:

A. "Barium-treated" cotton seeds

B. Carrying an endotoxin gene from Bacillus thuringiensis

C. "Bigger thread" variety of cotton with better tensile strength

D. What does Bt stand for the popular crop Bt-cotton?

Answer: B

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18. What does Bt stand for the popular crop Bt-cotton?

A. Best

B. Best type

C. Biotechnology

D. Bacillus thuringiensis

Answer: D

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19. The Bt-gene for insect resistance was obtained from:

A. B. tumefaciens

B. B. radicicola

C. B. thuringiensis

D. B. amyloliquifaciens

Answer: C

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20. The insecticidal property of B. thuringiensis was first discovered by:

A. Ishiwatari

B. Zakharyan

C. Robert A

D. Llewellyn

Answer: A

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21. Isolation of Bt-gene from bacterium (Bacillus thuringiensis) was taken up in the year:

A. 1977

B. 1981

C. 1997

D. 1990

Answer: B

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22. Bt toxin is obtained from:

A. prokaryotes

B. eukaryotes

C. both(a) and (b)

D. none of these

Answer: A

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23. Bt toxin is :

A. lipid

B. intracellular lipid

C. intracellular crystalline protein

D. extracellular crystalline protein

Answer: D

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24. A protoxin is:

A. inactive toxin

B. a primitive toxin

C. a denatured toxin

D. toxin produced by protozoa

Answer: A

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25. What is true about Bt toxin?

A. The concerned Bacillus has antitoxins

B. Bt protein exists as active toxin in the Bacillus

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

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

Answer: C

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26. If you engineer the gene for Bt toxin from Bacillus thuringiensis into a tomato plant, the resulting plant will be:

A. die

B. have a Bacillus infection

C. to be toxic to insect that eat the plants

D. be toxic to human who eat the tomatoes

Answer: C

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27. Which one of the following bacterium is used extensively as biopesticide?

A. Bacillus subtilis

B. Streptococcus lactis

C. Bacillus thuringiensis

D. Lactobacillus acidophilus

Answer: C

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28. Which of these is not correct regarding Bt cotton ?

A. No such plant is heard of

B. It is a disease/ resistant plant

C. It has been obtained by recombination

D. it has endotoxin in its cells

Answer: A

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29. The protein toxin producing bacteria, which used to control biological pest is :

A. E. coli

B. Agrobacterium

C. Mycobacterium sp.

D. B. thuringensis

Answer: D

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

A. Biofertilizers

B. Bioinsecticidal plants

C. Biometallurgical techniques

D. Biomineralization processes

Answer: B

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31. Match List I with List II and select the correct option:

	List I		List II
A	Bacillus thuringiensis	1	Production of chitinases
B	Rhizobium meliloti	2	Scavenging of oil spills
C	Escherichia coli	3	Incorporation of nif-gene
D	Pseudomonas putida	4	Production of Bt toxin
E	Trichoderma	5	Production of human insulin

A. A=2, B=4, C=1, D=5, E=3

B. A=2, B=4, C=5, D=1, E=3

C. A=4, B=3, C=5, D=2, E=1

D. A=3, B=4, C=5, D=1, E=2

Answer: C

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32. Bt-cotton is resistant to:

A. insects

B. herbicides

C. salt resistant

D. drought resistant

Answer: A

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33. Bt-cotton genes repel:

A. bacterial pathogens

B. fungal pathogens

C. nematode parasites

D. insect pests

Answer: D

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34. Bacillus thuringiensis is used to control:

A. bacterial pathogens

B. fungal pathogens

C. nematodes

D. insect pests

Answer: D

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35. cryII Ab and cry I Ab produce toxins that control:

A. cotton boll worm and corn borer respectively

B. corn borer and cotton bollworm respectively

C. tobacco budworms and nematod's respectively

D. nematodes and tobacco budworms respectively

Answer: A

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36. Which one of the following is an example of carrying out biological control of pests/diseases using microbes ?

A. Bt-cotton to increase cotton yield

B. Lady bird beetle against aphids in mustard

C. Trichoderma sp. Against certain plant pathogens

D. Nuclepolyhedrovirus against white rust in Brassica

Answer: A

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37. The trigger for activation of toxin of Bacillus thuringiensis is:

A. high temperature

B. alkaline pH of gut

C. acidic pH of stomach

D. mechanical action in the insect gut

Answer: B

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38. First genetically modified plant commercially released in India is:

A. Bt-bringal

B. Bt-cotton

C. Golden rice

D. Slow ripening tomato

Answer: B

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39. Some of the characteristics of Bt-cotton are :

A. Long fibre and resistance of aphids

B. High yield and resistance to bollworms

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

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

Answer: B

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40. The protein products of the following Bt toxin genes cryIAc and cryIIAb are responsible for controlling:

A. Moth

B. Fruit fly

C. Bollworm

D. Roundworm

Answer: C

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41. Bacillus thuringiensis forms protein crystals which contain insecticidal protein. This protein:

A. does not kill the carrier bacterium

B. binds with epithelial cells of midgut of the insect pest ultimately killing it

C. is coded by several genes including the gene cry

D. is activated by acid pH of the foregut of the insect pest

Answer: C

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42. Bt toxin protein crystals present in bacterium Bacillus thuringiensis, do not kill the bacteria themselves because

A. toxin is inactive

B. toxin is immature

C. bacteria are resistant to toxin

D. bacteria enclose toxin in a special sac

Answer: A

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

A. Insect-resistance

B. Enhancing shelf life

C. Drought-resistance

D. Enhancing mineral content

Answer: A

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44. Salt resistant transgenic has been developed for:

A. brinjal

B. grape

C. potato

D. tomato

Answer: D

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45. Which of the following is known as 'Flavr Savr' ?

A. Breed of chicken

B. Transgenic tomato

C. Toxic insecticidal protein

D. Specific variety of pesticide

Answer: B

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46. An example of gene silencing is:

A. Bt-cotton

B. Transgenic rice

C. Flavr savr tomato

D. Transgenic maize

Answer: C

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47. what is antisense technology

A. RNA polymerase producing DNA

B. production of somaclonal variants in tissue cultures

C. A cell displaying a foreign antigen used for synthesis of antigens

D. When a piece of RNA that is complementary in sequence is used to stop expression of a specific gene

Answer: D

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48. RNA interfeence is essential for the

A. cell defence

B. cell proliferation

C. micropropagation

D. cell differentiation

Answer: A

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49. Silencing of a gene could be achieved through the use of :

A. short interfering RNA (RNAi)

B. antisense RNA

C. by both of the above

D. none of the above

Answer: C

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50. The process of RNA interference has been used to make tobacco plant resistant to

A. Loa loa

B. Necator americanus

C. Rhabditis maupasi

D. Meloidogyne incognita

Answer: D

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51. The process of RNA interference has been used in the development of plants resistant to

A. insects

B. fungi

C. viruses

D. nematodes

Answer: D

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52. Silencing of mRNA has been used in producing transgenic plants resistant to:

A. bollworms

B. nematodes

C. white rusts

D. bacterial blights

Answer: B

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53. The Nobel prize in Physiology of Medicine 2006 was awarded jointly to Andrew Z. Fire and Craig C . Mello for:

A. RNA interference - gene silencing by double-stranded RNA technique.

B. Hybridoma technology for the production of monoclonal antibodies

C. Invention of polymerase chain reaction

D. Recombinant DNA technology

Answer: A

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54. Genetically engineered bacteria are being employed for production of

A. melatonin

B. thyroxine

C. human insulin

D. testosterone

Answer: C

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55. Humulin is a/an:

A. fat

B. acid

C. carbohydrate

D. protein

Answer: D

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56. Humulin is:

A. human insulin

B. a form of chitin

C. a powerful antibiotic

D. a new digestive enzyme

Answer: A

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57. The first genetically engineered human insulin was launched in the year:

A. 1975

B. 1990

C. 1993

D. 1983

Answer: D

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58. First hormone prepared artificially by culturing bacteria was:

A. insulin

B. oxytocin

C. adrenaline

D. somatotropin

Answer: A

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59. The first human hormone drug produced by recombinant DNA technology genetic engineering is

A. interferons

B. penicillin

C. human insulin

D. fertility factors

Answer: C

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60. C-peptide of human insulin is

A. A part of mature insulin molecule

B. Responsible for its biological activity

C. Responsible for formation of disulphide bridges

D. Removed during maturation of proinsulin to insulin

Answer: D

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61. Maturation of genetically engineered proinsulin into insulin takes place after:

A. joining of c-peptide

B. removal of c-peptide

C. removal of disulphide bridge

D. all of the above

Answer: B

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62. The first genetically engineered human insulin was launched in the year:

A. 1975

B. 1993

C. 1990

D. 1983

Answer: D

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63. Human insulin is being commercially produced from a transgenic species of

A. Rhizobium

B. Escherichia

C. Saccharomyes

D. Mycobacterium

Answer: B

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64. Which of the following is produced by genetically engineered bacteria:

A. Thyroxine

B. Insulin

C. Glucagon

D. ADH

Answer: B

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65. Which is true?

A. Centromere is found in animals which produces aster during cell division

B. Insulin gene is present in every body cell

C. Nucleosome is formed of nucleotides

D. DNA has a core of eight histones

Answer: B

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66. Some of the step involved in the production of humulin are given below. Arrange them in the correct sequence and select the correct option

(i) Synthesis of gene (DNA) for human insulin artifically

(ii) Culturing recombinant E.coli in bioreactors

(iii) Purification of humulin

(iv) Insertion of human insulin gene into plasmid

(vi) Etraction of recombinant gene product from E.coli.

A. ii, i, iv, iii, v, vi

B. i, iii, v, vi, ii, iv

C. i, iv, v, ii, vi, iii

D. iii, v, ii, i, vi, iv

Answer: C

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67. The first clinical gene therapy was given for treating :

A. Chinken pox

B. Diabetes mellitus

C. Rheumatoid arthritis

D. Adenosine deaminase deficiency

Answer: D

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68. ADA is an enzyme which is deficient in a genetic disorder SCID. What is the full form of ADA ?

A. Arginine deaminase

B. Aspartate deaminase

C. Adenosine deaminase

D. Adenosine deoxy aminase

Answer: C

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69. Fearing that the child to be born may have a genetic disorder, a couple goes to a doctor. Which one of the following techniques is likely to be suggested by the doctor to cure the genetic disorder ?

A. Gene therapy

B. Embryo transfer

C. r-DNA technology

D. Hybridoma technology

Answer: A

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70. Abnormal gene is replaced by normal genes through

A. cloning

B. radiation

C. medicines

D. gene therapy

Answer: D

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71. .....is the transfer of normal genes into body cells to correct a genetic defect:

A. Gene therapy

B. Gene mutation

C. Reverse transcription

D. Nucleic acid hybridization

Answer: A

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72. An example of gene therapy is

A. production of injectable Hepatitis B vaccine

B. production of vaccines in food crops like potatoes which can be eaten

C. production of test tube babies by artificial insemination and implantatin of fertilized eggs

D. introduction of gene for adenosine deaminase in persons suffering from Severe Combined Immunodeficiency (SCID)

Answer: D

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73. SCID is caused by defective gene coding for the enzyme called

A. adenosine deaminase

B. guanosine deaminase

C. adenosine transferase

D. adenosine transaminase

Answer: A

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74. Disorder in which B-lymphocytes and T-lymphocytes are not formed in:

A. AIDS

B. SCID

C. Cystic fibrosis

D. Muscular dystrophy

Answer: B

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75. Assertion : The first clinical gene for ADA therapy was given to cure SCID

Reason : The normal gene was delivered into the patient's cell using retroviral vector

A. Arbovirus

B. Rotavirus

C. Retrovirus

D. Enterovirus

Answer: C

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76. The genetic defect-adenosine deaminase (ADA) deficiency may be cured permanently by

A. enzyme replacement therapy.

B. administering adenosine deaminase activators.

C. periodic infusion of genetically engineered lymphocytes having functional ADA cDNA.

D. introducing bone marrow cells producing ADA into cells at early embryonic stages.

Answer: D

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77. Find the incorrect statement:

A. Gene therapy is a genetic engineering technique used to treat disease at molecular level by replacing defective genes with normal genes

B. Calcitonin is a medically useful recombinant product in the treatment of infertillity

C. Bt-toxin is a biodegradable insecticide from Bacillus thuringensis

D. Trichoderma sp. is a biocontrol agent for fungal diseases fo plants

Answer: B

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78. Small oligonucleotides capable of recognising complementary sequence are known as:

A. c-DNA

B. Hybridoma

C. Repetitive DNA

D. Molecular probes

Answer: D

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79. Which of the following is used to select genes of interest from a genomic liberary

A. Gene targets

B. DNA probes

C. Cloning vectors

D. Restriction enzymes

Answer: B

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80. A probe which is a molecule used to locate specific sequence in a mixture of DNA or RNA molecules could be

A. A single stranded RNA

B. A single stranded DNA

C. Either RNA or DNA

D. Can be ss DNA but not ss RNA

Answer: C

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81. The DNA probe CTTCAAT will hybridize DNA containing:

A. GAAGTTA

B. GUUGAAU

C. CTTCAAT

D. GAAGAAT

Answer: A

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82. In DNA segment the probe binds is identified by its size by using a technique called:

A. DNA probe

B. DNA denaturation

C. DNA polymorphism

D. None of the above

Answer: D

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83. Which one of the following technique is not used for early molecular diagnosis ?

A. polymerase chain reaction

B. polyacrylamide gel electrophoresis

C. Recombinant DNA technology

D. Enzyme linked immunosorbent assay

Answer: C

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84. ELISA is used to detect viruses where the key reagent is:

A. DNA probe

B. RNase

C. Alkaline phosphatase

D. Catalase

Answer: C

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85. Hybridoma technology was developed by

A. Taggart 1982

B. Vitella et al. 1982

C. Prie and Saxton 1987

D. Milstein and Kohler 1982

Answer: D

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86. Hybridoma technology has been successfully used in:

A. synthesis of haemoglobin

B. production of alcohol in bulk

C. production of somatic hybrids

D. synthesis of monoclonal antibodies

Answer: D

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87. monoclonal antibody is produced from:

A. hybridoma

B. melanoma

C. myeloma

D. B-lymphocyte

Answer: A

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88. Cesar Milstein and Georges J.F. Kohler developed biotechnology for the production of:

A. myelomas

B. steroid conversion

C. immobilised enzymes

D. monoclonal antibodies

Answer: D

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89. Milstein and Kohler won the Nobel Prize for the development of monoclonal antibodies in the year:

A. 1978

B. 1975

C. 1984

D. 1991

Answer: C

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90. Cells obtained from cancerous tumors are known as

A. myelomas

B. hybridomas

C. lymphocytes

D. monoclonal cells

Answer: A

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91. Which is employed for synthesis of monoclonal antibody by hybridoma technique?

A. RBCs

B. Liver cells

C. Tumour cells

D. Nerve cells

Answer: C

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92. Hybridoma' refers to:

A. DNA-RNA hybrid molecules

B. DNA-DNA hybridized molecules

C. fused somatic cells of different types, one of them derived from a tumour

D. fused gametic cells of two opposite sexes one of them being derived from a tumour-bearing patient

Answer: C

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93. Hybridomas are the fusion product of :

A. normal antibody producing cell with myeloma

B. abnormal antibody producing cell with myeloma

C. sex cells with myeloma

D. bone cells with myeloma

Answer: A

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94. Hybridoma is a biotechnique which involves fusion of:

A. B-cell with T-cell

B. T-cell with spleen cell

C. Spleen cell with myeloma cell

D. Myeloma cell with B-cell

Answer: D

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95. Magic bullets are the:

A. anabolic steroids

B. recombinant vaccines

C. monoclonal antibodies

D. chemotherapy drugs for cancer

Answer: C

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96. Hybridoma is connected with:

A. Monoclonal antibody formation

B. Antibody-antigen interaction

C. Activity of NK cells

D. Growth of cancer

Answer: A

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

A. insulin

B. vaccines

C. interferons

D. edible proteins

Answer: B

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98. The first vaccine for human use produced use produced using recombinant DNA technology was:

A. AIDS vaccine

B. MMR vaccine

C. polio vaccine

D. Hepatitis B vaccine

Answer: D

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99. Hepatitis B vaccine is a:

A. Second generation vaccine

B. Third generation vaccine

C. First generation vaccine

D. None of the above

Answer: A

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100. Vaccines prepared through recombinant DNA technology are called:

A. First generation vaccines

B. Second generation vaccines

C. Third generation vaccines

D. None of the above

Answer: C

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101. Genetic engineering is employed to produce vaccines for:

A. Herpes virus

B. Hepatitis B

C. Both of these

D. None of these

Answer: C

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102. It is sometimes necessary to genetically engineer mammalian cells to produce protein because they:

A. are easier to grow than bacteria

B. can read eukaryotic genes, and bacteria cannot

C. can produce larger quantities of proteins than bacteria

D. can add sugars to make glycoproteins and bacteria cannot

Answer: D

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103. Transgenic having no gene

A. plants having no gene

B. plants in which genes have no function to perform

C. plants into which genes of another organism have been implanted

D. plants in which genes are present in an opposite or transposition

Answer: C

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104. Transgenic plants are developed by:

A. clone and genetically modified genes

B. introduction of foreign genes

C. genetic engineering

D. purified genes

Answer: B

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105. Transgenic plants are the ones:

A. generated by introducing foreign DNA in to a cell and regenerating a plant from that cell

B. grown in artificial medium after hybridization in the field

C. produced after protoplast fusion in artificial medium

D. produced by a somatic embryo in artificial medium

Answer: A

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106. A transgenic plant is one into which:

A. a genes from another plant is introduced

B. a gene from an animal is introduced

C. a gene from a microorganism is introduced

D. all of the above

Answer: D

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107. Main objective of production of herbicide resistant GM crops is to

A. encourage ecofriendly herbicides

B. reduce herbicide accumulation in food articles for health safety

C. eliminate weeds from fields without the use of herbicides

D. eliminate weeds from fields without use of herbicides

Answer: C

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108. Terminator gene

A. helps in terminating seed germination

B. helps in terminating flowering

C. used in hybridisation

D. none of the above

Answer: A

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109. Transgenic crop contains:

A. enzymes produced by the gene for antibiotics

B. gene for resistance to antibiotics

C. protein produced by the gene

D. all of the above

Answer: D

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110. Transgenic hirudin is obtained from:

A. Potato

B. Tomato

C. Brassica napus

D. Ocimum sanctum

Answer: C

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111. Introduction of transgenes:

A. can produce a protein product

B. can alter an existing biosynthetic pathway

C. both (a) and (b)

D. none of the above

Answer: C

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

A. Xanthomonas citri

B. Bacillus coagulens

C. Clostridium septicum

D. Agrobacterium tumefaciens

Answer: D

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113. Natural genetic engineer is:

A. Bacillus subtilli

B. Escherichia coli

C. Pseudomonas spp

D. Agrobacterium tumefaciens

Answer: D

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114. In plant biotechnology , PEG is used in:

A. Hardening

B. Protoplast fusion

C. Protoplast isolation

D. Cell culture preparation

Answer: B

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115. Which one of the following bacteria is used for production of transgenic plants ?

A. Escherichia coli

B. Bacillus thuringiensis

C. Staphylococcus aureus

D. Agrobacterium tumefaciens

Answer: D

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116. Which of the following would be considered a transgenic organism ?

A. A rat with rabbit haemoglobin genes

B. A bacterium that has received genes via conjugation

C. A fern grown in cell culture from a single fern root cell

D. A human treated with insulin produced by E. coli bacteria

Answer: A

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117. A 'giant mouse' in the laboratory can be produced by gene:

A. mutation

B. synthesis

C. duplication

D. gene manipulation

Answer: D

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118. 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 diseases

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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119. Maximum number of existing transgenic animals is of:

A. Pig

B. Fish

C. Mice

D. Cow

Answer: C

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120. Transgenic animals have been used:

A. for testing safety of vaccines

B. for testing toxicity of drugs

C. to produce useful biological products

D. all of the above

Answer: D

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121. The biological product created by the introduction of portions of DNA which codes which codes for α -1 antitrypsin, is used to treat:

A. asthma

B. bronchitis

C. Cystic fibrosis

D. emphysema

Answer: D

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122. The protein $\alpha - 1$ antitrypsin is used to treat the disease

A. Cancer

B. Emphysema

C. Alzheimer's diseases

D. ADA deficiency disease in children

Answer: B

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123. Which transgenic animal has been given human genes for organ transplantation into humans without risk of rejection ?

A. Pig

B. Cow

C. Sheep

D. Goat

Answer: A

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124. Which one of the following techniques made it possible to gnetically engineer living organisms ?

A. Hybridization

B. X-ray diffraction

C. Heavier isotope labelling

D. Recombinant DNA techniques

Answer: D

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125. Who discovered recombinant DNA(r-DNA) technology ?

A. Watson

B. Khorana

C. Sutton and Boveri

D. Cohen and Boyer

Answer: D

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126. Production of a human protein in bacteria by genetic engineering is possible because

A. the genetic code is universal

B. the human chromosome can replicate in bacterial cell

C. bacterial cell can carry out the RNA splicing reactions

D. the mechanism of gene regulation is identical in humans and bacteria

Answer: A

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127. Recombinant DNA technology can be used to produce large quantities of biologically active form of which one of the following products in E. coli?

A. Interferon

B. Ecdysone

C. Rifampicin

D. Luteinizing hormone

Answer: A

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128. Name of the drug used in cancer treatment produced by using biotechnology:

A. HGH

B. TSH

C. Interferon

D. Insulin

Answer: C

Watch Video Solution

129. Tissue plasmin activator:

A. dissolve clot in blood vessels of heart

B. help in would healing

C. allergy response

D. none of the above

Answer: A

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130. Name of the drug used in cancer treatment produced by using biotechnology:

A. TSH

B. HGH

C. Insulin

D. Interferon

Answer: D

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131. A genetically engineered microbe utilized for cleaning oil spills is:

A. Bacillus subtilis

B. Escherichia coli

C. Pseudomonas putida

D. Agrobacterium tumefaciens

Answer: C

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132. The bacteria Pseudomonas is useful because of its ability to

A. fix atmospheric nitrogen in the soil

B. produce a wide variety of antibiotics

C. transfer genes from one plant to another

D. decompose a variety of organic compounds

Answer: D

Watch Video Solution

133. Genetically engineered microorganism used successfully in bioremediation of oil spills is:

A. Bacillus

B. Trichoderma

C. Xanthomonas

D. Pseudomonas

Answer: D

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134. Match the following pairs correctly and choose the right combination

	Column-I		Column-II
$A.$	Escherichia coil	1.	'nif' gene
$B.$	Rhizobium melilotae	2.	Digests hydrocarbon of crude oil
$C.$	Bacillus thurigiensis	3.	Production of human insulin
$D.$	Pseudomonas putida	4.	Biological control of fungal disease
		5.	Bio-decomposed inserctiside

A. A=3, B=1, C=5, D=4

B. A=1, B=2, C=3, D=4

C. A=2, B=1, C=3, D=4

D. A=3, B=1, C=5, D=2

Answer: D

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135. What happens when we inoculate Rhizobium in wheat field?

A. Fertility of soil decreases

B. Fertility of soil increases

C. No increase in production (nitrogen content of soil remains same)

D. A lot of increase in production (nitrogen content of soil increases)

Answer: C

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136. Which of the following gene is responsible for biological nitrogen fixation?

A. Nif-gene

B. Nitrogenase

C. RNA synthetase

D. Yeast alanine t-RNA synthetase

Answer: A

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137. A regulatory body working under MoEF for the release of transgenic crops is:

A. NBPGR

B. GEAC

C. NSC

D. NIPGR

Answer: B

Watch Video Solution

138. GEAC stands for

A. Genome Engineering Action Committee

B. Ground Environment Action Committee

C. Genetic Engineering Approval Committee

D. Genetic and Environment Approval committee

Answer: C

Watch Video Solution

139. Choose the correct option regarding retrovirus

A. A ssDNA virus

B. A dsRNA virus

C. A DNA virus that can synthesise RNA during infection

D. An RNA virus that can synthesise DNA during infection

Answer: D

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140. Pathophysiology is the

A. physiology of pathogen

B. normal physiology of host

C. altered physiology of host

D. None of the above

Answer: C

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141. A patent is a monopoly granted to a person for:

A. making an improvement of an existing article

B. inventing a new process of making an article

C. invention of a new and useful article

D. all of the above

Answer: D

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142. The criteria for a patent are:

A. utility

B. novelty

C. inventiveness

D. all of these

Answer: D

Watch Video Solution

143. The patent is grant for a fixed period of time, generally for:

A. five years

B. ten years

C. twenty years

D. fifteen years

Answer: C

Watch Video Solution

144. Biopatents are awarded for the following:

A. Strains of microorganisms

B. DNA sequences

C. Cell lines

D. all of the above

Answer: D

Watch Video Solution

145. Illegal and unlawful development of biomaterials without payment to inhabitants of their region is called:

A. biowar

B. biopiracy

C. biopatent

D. biotechnology

Answer: B

Watch Video Solution

146. Which of the following is used a biological warfare agent?

A. Smallpox virus

B. Bacillus anthracis

C. Both of these

D. None of these

Answer: C

Watch Video Solution

147. Which of the following is included under intellectual property rights?

A. Copy rights

B. Patents

C. Plant breeders rights

D. All of these

Answer: D

Watch Video Solution

148. What right does a patent-holder have?

A. Right to make

B. Right to use

C. Right to export

D. All of these

Answer: D

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149. Who grants a patent?

A. Local body

B. Legal system

C. State government

D. Central government

Answer: B

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150. The unauthorized publication or reproduction of another's material is termed:

A. piracy

B. theft

C. dacoity

D. robbery

Answer: A

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151. A false claim to novelty and invention come under:

A. Economic Piracy

B. Resource Piracy

C. Intellectual piracy

D. None of these

Answer: C

Watch Video Solution

152. Syngenta , the biotech giant is associated with biopiracy of:

A. Atta

B. Rice

C. Neem

D. Basmati

Answer: B

Watch Video Solution

153. Bioweapons are :

A. invisible

B. low cost

C. difficult to detect

D. all of these

Answer: D

Watch Video Solution

154. Which of the following countries is reported to have conducted extensive research and development work on bioweapons?

A. India

B. Iraq

C. Pakistan

D. South Africa

Answer: B

Watch Video Solution

155. An American MNC W.R. Grace is associated with the biopiracy of:

A. Neem

B. Haldi

C. Basmati

D. Bt-cotton

Answer: A

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156. Which of the following is/are true?

1. Biowar - Biowar is the use of biological weapons angaint humans and or their crops and animals.

2. Bioethics - Bioethics is the unauthorised use of bioresources and traditional use of bioresources and traditional knowledge related to

bioresources for commercial benefits.

3. Biopatent - Exploitation of bioresources of other nations without proper authorisation .

A. 2 only

B. 1 only

C. 1 and 2 only

D. 1 and 3 only

Answer: B

Watch Video Solution

157. The 'clot buster ' produced by Streptococcus and modified by gemetic emgineering is

A. statins

B. sterpsils

C. penicillin

D. streptokinase

Answer: D

Watch Video Solution

158. Monascus purpureus is a yeast ued commercially in the production of

A. ethanol

B. citric acid

C. blood cholesterol lowering statins

D. streptokinase for removing dots from the blood vessels

Answer: C

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159. Which one single organism or the pair of organisms is correctly assigned to its or their named taxonomic group

A. Paramecium and Plasmodium belong to the same kingdom as that of Penicillium

B. Lichen is a composite organism formed from the symbiotic association of an algae and a protozoan

C. Yeast used in making bread and beer is a fungus

D. Nostoc and Anabaena are examples kof protista

Answer: C

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160. The genetic defect-adenosine deaminase (ADA) deficiency may be cured permanently by

A. bone marrow transplantation

B. enzyme replacement therapy

C. administering adenosine deaminase through injection

D. introducing isolated gene from marrow cells producing ADA into the cells at early embryonic stages

Answer: D

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161. Green revolution in India occurred during

A. 1960's

B. 1970's

C. 1980's

D. 1950's

Answer: A

Watch Video Solution

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

A. an antifeedant

B. a toxin protein

C. a particular hormone

D. both sense and anti-sense RNA

Answer: D

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163. Consider the following four statement (1-4) and select the option which includes all the correct ones only

(1) Single cell Spirulina can produce large quantities of food rich in protein, minerals, vitamins etc

(2) Body weight-wise the microorganism Methylophilus methylotrophus

may be able to produce several times more proteins then the cows pe day

(3) Common button mushrooms are a very rich source of vitamin C

(4) A rich variety has been developed which is very rich in calcium

A. Statements 1 and 2

B. Statements 3 and 4

C. Statements 1, 3 and 4

D. Statements 2, 3 and 4

Answer: A

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164. Assertion : Agrobacterium tumefaciens is the causative agent of crown gall disease of dicots.

Reason : Agrobacterium tumefaciens causes infection by entering the plant through wounds and injuries.

A. Statements A is correct and B is wrong.

B. Statement B is correct and A is wrong.

C. Both statements A and B are correct.

D. Both statements A and B are wrong.

Answer: C

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165. this is not a GMO:

A. Tracy

B. Dolly

C. Bt-Brinjal

D. Golden rice

Answer: B

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166. Human proteins can be produced in the milk or semen of farm animals. True of false?

A. True.

B. False, proteins cannot be produced in milk.

C. False, proteins cannot be produced in semen.

D. False, animals are not used for protein production.

Answer: A

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

A. Maize

B. Brinjal

C. Cotton

D. Soybean

Answer: C

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168. In one of the techniques of recombinant insulin production the genes for α and β polypeptides were inserted into the plasmid by the side of:

A. antibiotic resistance gene

B. lac z promoter gene

C. β galactosidase gene

D. ori site

Answer: C

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169. Several plant pathogens can be controlled by the biocontrol agent:

A. Phytophthora

B. Trichoderma

C. Albugo

D. Saccharomyces

Answer: B

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170. Which of the following pairs of bacteria are generally used in genetic engineering experiments?

A. Nitrosomonas and Azotobacter

B. Klebsiella and Rhizobium

C. Escherichia and Agrobacterium

D. Diplococcus and Nitrosomonas

Answer: C

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171. In case of Bacillus thuringiensis, Bacillus itself is not killed by the toxic protein crystals produced by it because Bt toxin:

A. Protein is not produced in the Bacillus

B. cannot cause any damage to Bacillus

C. protein is produced in very less amount in the Bacillus

D. exist as the inactive toxin

Answer: D

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172. In vitro clonal propagation in plants is characterized by

A. Microscopy

B. PCR and RAPD

C. Northern blotting

D. Electrophoresis and HPLC

Answer: B

Watch Video Solution

173. To obtain virus-free healthy plants from a diseased one by tissue culture technique, which part/parts of the diseased plant will be taken?

A. Epidermis only

B. Apical meristem only

C. Palisade parenchyma

D. Both apical and axillary meristems

Answer: D

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174. The semi dwarf wheat which was instrumental in increasing wheat production was production was developed by:

A. Paul Ehrlich

B. Dr. Kurien

C. Edward Jenner

D. Norman E. Borlaug

Answer: D

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175. Match column I with column II and choose the correct option:

	Column I		Column II
A.	Totipotency	1.	breeding crop with higher levels of nutrients
B.	Micropropagation	2.	plant grown from hybrid protoplast
C.	Somaclone	3.	producing a large number of plants through
D.	Somatic hybrid	4.	capacity to generate a whole plant from exp
E.	Biofortification	5.	plants genetically identical to the original p

A. A-4, B-3, C-5, D-2, E-1

B. A-1, B-5, C-2, D-4, E-3

C. A-3, B-2, C-5, D-4, E-1

D. A-4, B-5, C-5, D-4, E-3

Answer: A

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176. The strategy used to prevent the nematode infection in the roots of tobacoo plant in called:

A. Bt toxin gene

B. Gene mutation

C. RNA interfernece

D. Use of agrochemicals

Answer: C

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177. Gene therapy is a treatment that can be done with:

A. adults only

B. child or embryo only

C. pregnant mothers only

D. persons of any age and any condition

Answer: D

Watch Video Solution

178. RNA interference which is employed in making tobacco plant resistant to Meloidegyne incognita is essentially involved in preventing the process of:

A. transcription

B. splicing of hn-RNA

C. replication of DNA

D. translation of m-RNA

Answer: D

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179. The inactive protoxin is activated in the gut of the insect by :

A. acidic pH

B. alkaline pH

C. low temperature

D. high temperature

Answer: B

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180. Cry ' gene is obtained from:

A. Agrobacterium tumefaciens

B. Rhizobium leguminosarum

C. Bacillus thuringiensis

D. Rhizobium phaseoli

Answer: C

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181. In India, research in genetic modification of organisms and safety issues are controlled by:

A. DBT

B. IARI

C. CSIR

D. GEAC

Answer: D

Watch Video Solution

182. Which of the following is used to promote growth of new blood vessels, thus helping in wound healing?

A. Humulin

B. TPA

C. TGF-β

D. $\alpha - 1$ antitrypsin

Answer: C

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183. Which is correct regarding genetically engineered insulin using E.coli ?

A. Difficult to purify

B. Obtained in large unlimited quantities

C. Possibility of transmission of animal dieases

D. Insulin obtained varies in chemical structure

Answer: B

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184. Insect pest resistant Bt-cotton plant was developed using:

A. micropropagation

B. somaclonal variation

C. somatic hybridization

D. transgenic technology

Answer: D

Watch Video Solution

185. Protein encoded by gene cryIAB controls the infestation of which of the following insects:

A. Corn borer

B. Aedes mosquito

C. Cotton boll worm

D. Anopheles mosquito

Answer: A

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186. Which of the following enhances or induces fusion of protoplasts

A. Sodium chloride and potassium chloride

B. Polyethylene glycol and sodium nitrate

C. IAA and gibberellins

D. IAA and kinetin

Answer: B

Watch Video Solution

187. What is the advantage in clinical use of humulin (human insulin produced through r-DNA technique) over the use of conventional ox or pig insulin?

A. It does not cause immunological problems.

B. It is produced by E. coli in our intestine.

C. It is cheaper for the patient.

D. There is no advantage.

Answer: A

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188. One of the advantages of developing transgenic mice is that it is very useful:

A. in gene targeting

B. to study vaccine safety

C. to producing new varieties of mice

D. in developing a show piece example

Answer: B

Watch Video Solution

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

A. Golden rice

B. Starlink maize

C. Bt soyabean

D. Flavr Savr tomatoes

Answer: A

Watch Video Solution

190. The microbe Pseudomonas denitrificans produces Vitamin

A. K

B. D

C. B_2

D. B_{12}

Answer: D

Watch Video Solution

191. Trangenic animals are generally produced for all of the following needs except:

A. testing of chemical safety

B. testing of vaccine safety

C. stimulation of pathogenicity

D. production of pharmacologically important proteins

Answer: C

Watch Video Solution

192. Golden rice is a genetically modified crop plant where the incorporated gene is meant for biosynthesis of:

A. Vitamin B

B. Vitamin C

C. Omega 3

D. Vitamin A

Answer: D

Watch Video Solution

193. The introduction of t-DNA into plants involves

A. Altering the pH of the soil, then heat-shocking the plants

B. Infection of the plant by Agrobacterium tumefaciens

C. Exposing the plants to cold for a brief period

D. Allowing the plant roots to stant in water

Answer: B

Watch Video Solution

194. The DNA molecule to which the gene of interst is integrated for cloning is called

A. Vector

B. Template

C. Carrier

D. Transformer

Answer: A

Watch Video Solution

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

A. Convalent bond

B. Hydrogen bonds

C. Disulphide bridges

D. Phosphodiester bond

Answer: C

Watch Video Solution

196. Which part of the tobacco plant is infected by Meloidogyne incognita?

A. Stem

B. Root

C. Leaf

D. Flower

Answer: B

Watch Video Solution

197. What is the permanent cure of adenosine deaminase (ADA) deficiency in children ?

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Ncert Problems

1. Bt cotton is not

A. A GM plant

B. Insect resistant

C. Resistant to all pesticides

D. A bacterial gene expressing system

Answer: C

Watch Video Solution

Watch Video Solution

2. C-peptide of human insulin is

A. Removed during maturation of pro-insulin to insulin

B. Responsible for formation of disulphide bridges

C. Responsible for its biological activity

D. A part of mature insulin molecule

Answer: A

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3. GEAC stands for

A. Genome Engineering Action Committee

B. Ground Environment Action Committee

C. Genetic Engineering Approval Committee

D. Genetic and Environment Approval committee

Answer: C

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4. $\alpha - 1$ antitrypsin is

A. An antacid

B. An enzyme

C. Used to treat arthritis

D. used to treat emphysema

Answer: D

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5. A probe which is a molecule used to locate specific sequence in a mixture of DNA or RNA molecules could be

A. A single stranded RNA

B. A single stranded DNA

C. Either RNA or DNA

D. Can be ss- DNA but not ss RNA

Answer: C

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6. Choose the correct option regarding retrovirus

A. An RNA virus that can synthesise DNA during infection

B. A DNA virus that can synthesise RNA during infection

C. A ss-DNA virus

D. A ds-RNA virus

Answer: A

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7. The site of production of ADA in the body is

A. Bone marrow

B. Lymphocytes

C. Blood plasma

D. Monocytes

Answer: B

Watch Video Solution

8. A protoxin is

A. inactive toxin

B. a primitive toxin

C. a denatured toxin

D. Toxin produced by protozoa

Answer: A

Watch Video Solution

9. Pathophysiology is the

A. Study of physiology of pathogen

B. Study of normal physiology of host

C. Study of altered physiology of host

D. None of the above

Answer: C

Watch Video Solution

10. The trigger for activation of toxin of Bacillus thuringiensis is

A. high temperature

B. alkaline pH of gut

C. acidic pH of stomach

D. mechanical action in the insect gut

Answer: B

Watch Video Solution

11. Golden rice is

A. Long stored rice having yellow colour tint

B. A transgenic rice having gene for - carotene

C. Wild variety of rice with yellow coloured grains

D. A variety of rice grown along the yellow river in China

Answer: B

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12. In RNAi, genes are silenced using

A. ss-DNA

B. ds-DNA

C. ds-RNA

D. ss-RNA

Answer: C

Watch Video Solution

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

A. AIDS

B. Cancer

C. Cystic fibrosis

D. SCID (Severe Combined Immuno Deficiency resulting form deficiency of ADA)

Answer: D

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14. ADA is an enzyme which is deficient in a genetic disorder SCID. What is the full form of ADA ?

A. Arginine deaminase

B. Adenosine deaminase

C. Aspartate deaminase

D. Adenosine deoxy aminase

Answer: B

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15. Silencing of a gene could be achieved through the use of

A. antisense RNA

B. short interfering RNA (RNAi)

C. both of the above

D. None of the above

Answer: C

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16. Read the following five statement (A to E) about gene therapy and select the option with all correct statement:

(A) The first clinical gene therapy was given in 1990 to a patient fo emphysema.

(B) Gene therapy is a collection of methods that allows correction of a

gene defect.

(C) Adenosine deaminase (ADA) enzyme is crucial for the immune system to function.

(D) Adenosine deaminase (ADA) deficiency is caused due to the duplication of the gene for adenosine deaminase.

(E) ADA deficiency can be cured by bone marrow transplantation.

A. (A), (D) and (E)

B. (B), (C) and (E)

C. (A), (C) and (D)

D. (A), (B) and (D)

Answer: B

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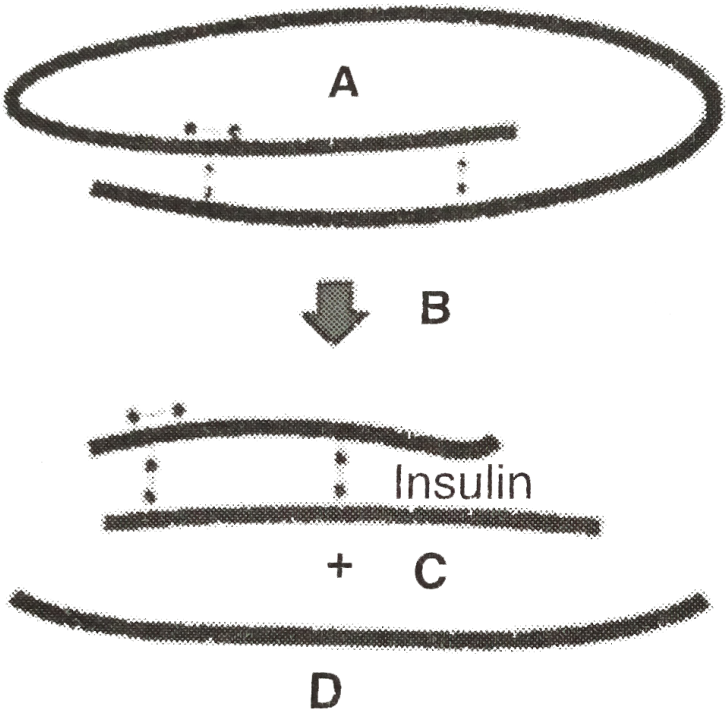
17. Maturation of pro-insulin into insulin (simplified) is given below. Select the correct option:



A. A-Proinsulin, B-A peptide, C-B peptide, D-Free C peptide

B. A-A peptide, B-Proinsulin, C-B peptide, D-Free C peptide

C. A-Proinsulin, B-B peptide, C-A peptide, D-Free C peptide

D. A-Free C peptide, B-Proinsulin, C-A peptide, D-B peptide

Answer: A

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18. Which one of the following statement is wrong?

A. Agrochemicals are often too expensive for farmers in the developing world.

B. GM plants are useful in reducing reliance on chemical pesticides.

C. The Green Revolution succeeded in tripling the food supply.

D. The Green Revolution was enough to feed the growing human population.

Answer: D

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19. Consider the following statements.

A. Bt toxin is produced by a bacterium called Bacillus thuringiensis.

B. The Bt toxin is coded by a gene named cry.

C. Bt inactive toxin is converted into an active form of toxin due to the acidic pH of the insect gut.

D. The Bt proteins encoded by the genes cryIAc and cryIIAb control the corn borer.

Of the above statements:

A. B and C are correct

B. B and D are correct

C. A and B are correct

D. A and D are correct

Answer: C

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20. Which of the following statement/s is/are wrong?

I. Biotechnology deals with industrial scale production of biopharmaceuticals and biologicals using genetically modified microbes, fungi, plants and animals.

II. Insulin consists of two short polypeptide chains: chain A and chain B, that are linked together by disulphide bridges.

III. C peptide is not present in the mature insulin and is removed during maturation proinsulin into insulin.

IV. The recombinant therapeutics induce unwanted immunological responses.

V. For effective treatment of a disease, early diagnosis and understanding its pathophysiology is very important.

A. IV only

B. II and IV only

C. III and V only

D. I, II and IV only

Answer: A

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21. Consider the following statements with respect to PCR.

A. PCR is now routinely used to detect HIV in suspected AIDS patients.

B. PCR is being used to detect mutations in genes in suspected cancer

patients.

C. PCR involves the amplification of mRNA.

D. In PCR repeated amplification of RNA is achieved by the use of a thermostable RNA polymerase.

Of the above statement:

A. B and D are correct

B. A and B are correct

C. A and C are correct

D. A and D are correct

Answer: B

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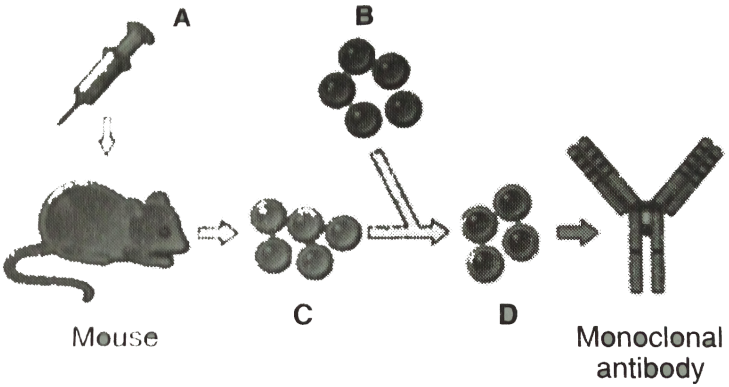
22. Hybridoma technique and production of monoclonal antibodies are shown below. Indentify A, B, C and D by selecting the option:



A. A-Antigen, B-B-cells, C-Myeloma cells, D-Hybridoma

B. A-Hybridoma, B-Antigen, C-Myeloma cells, D-B-cells

C. A-Antigen, B-Hybridoma, C-Myeloma cells, D-B-cells

D. A-Antigen, B-Myeloma cells, C-B-cells, D-Hybridoma

Answer: D

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Assertion Reason Type Questions

1. (A) : Genetic engineering is now considered as a kind of biotechnology.

(R) : This technique is used nowadays to make better products such as enzymes, hormones and vaccines.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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2. (A) : Genetic engineering can be used to improve the quality of human life.

(R) : It helps in the rectification of genetic errors.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

Watch Video Solution

3. (A) : A vector is used as carrier for transferring selected genes to a bacterium, plant or animal cell.

(R) : Artificial chromosomes from bacteria and yeast cells called BACs and YACs are efficient vectors.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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4. (A) : Agrobacterium Ti plasmid is used to induce genetic transformation in plants.

(R) : Agrobacterium tumefacients usually causes crown gall disease in monocotyledons.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: C

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5. (A) : Chimera is an animal that is a mix of several other animals.

(R) : The Chimera or mythology had a lion's head, a goat's body and a serpent's tail and breathed fire.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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6. (A) : Animal cloning is more difficult than plant cloning.

(R) : Animal cells lose their totipotency on reaching gastrula stage of embryonic development.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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7. (A) : Restriction endonuclease is an enzyme obtained from bacteriophages.

(R) : It can recognize specific base sequences in mRNA..

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: D

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8. (A) : Restriction endonuclease are referred to as the immune system of prokaryotes.

(R) : These enzymes protect the genetic material of bacteria from 'invasion' by foreign DNAs.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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9. (A) : Palindromes are nucleotide- pair sequences that read the same forward or backward from a central axis of symmetry.

(R) : Palindrome sequences are recognized by DNA ligase.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: C

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10. (A) : Ethidium bromide is a known mutagen.

(R) : It can be used to stain DNA and visualise by exposure to UV radiation.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: B

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11. (A) : DNA is a hydrophobic molecule.

(R) : It can pass through cell membrane very easily.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: D

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12. (A) : In agarose gel electrophoresis, DNA moves towards the positive electrode.

(R) : DNA is a negatively charged molecule.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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13. (A) : The thermal cycler is a laboratory apparatus.

(R) : It is used to amplify segments of DNA via PCR.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: B

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14. (A) : PCR is a method for amplifying a specific piece of DNA.

(R) : It is a powerful technique to identify many genetic disorders.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: B

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15. (A) : The Bt toxin proteins exist as inactive protoxins.

(R) : It is converted into an active form of toxin by the acidic pH of the gut of the insect.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: C

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16. (A) : RNAi takes place in all eukaryotic organisms as a method of cellular defence.

(R) : This method involves silencing of a specific mRNA due to a complementary dsRNA molecule.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: B

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17. (A) : In mammals insulin is synthesized in pancreas in mature form.

(R) : It can be inactivated by breaking two disulphide bridges.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: D

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18. (A) : ADA deficiency is a genetic disease.

(R) : It is caused by a mutation of ADA gene.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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19. (A) : Hybridoma is a cell formed by the fusion of a cancer cell with a plasma cell.

(R) : It is used to produce large amounts of a single vaccine.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: C

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20. (A) : Monoclonal antibodies are true "magic bullets".

(R) : They strike specific molecules leaving rest of the body unharmed.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: A

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21. (A) : The first transgenic animal produced was the "super mouse".

(R) : It was made by the incorporation of gene for human growth hormone.

A. If both (A) and (R) are true and (R) is the correct explanation of (A).

B. If both (A) and (R) are true but (R) is not the correct explanation of (A).

C. If (A) is true but (R) is false.

D. If both (A) and (R) are false.

Answer: B

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