



BIOLOGY

BOOKS - A2Z BIOLOGY (HINGLISH)

BIOTECHNOLOGY AND ITS APPLICATION

Section A Topicwise Questions Topic 1
Biotechnological Applications In Agriculture

1. Genetically modified organisms are used for

- A. reducing reliance on chemical pesticides
- B. developing pest resistant crops
- C. increasing efficiency of mineral usage by plants that prevents early exhaustion of fertility of soil
- D. all of the above

Answer: D



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2. The application of biotechnology include

A. industrial scale production of
biopharmaceuticals and biologicals
using genetically modified microbes
fungi plants and animals

B. therapeutics diagnostics and
bioremediation

C. genetically modified crops for
agriculture processed food waste

treatment and energy production

D. all of the above

Answer: D



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3. The green revolution succeeded in tripling the food supply but yet it not enough to feed the growing human population increased have mainly been due to the use of
a Improve crop varieties

b better management practices

c agrochemicals (fertilizers and pesticides)

A. a and c

B. b and c

C. a only

D. a,b and c

Answer: B



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4. *Bacillus thuringiensis* has been used to kill certain insects such as

A. b,c

B. a,b

C. a,c

D. a,b,c

Answer: D



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5. The critical research area of biotechnology is/are

A. downstream processing technologies to purify the protein /organic compound

B. providing the best catalyst in the form of improved organism usually a microbe or pure enzyme

C. creating optimal conditions through engineering for a catalyst to act

D. all of the above

Answer: D



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6. The choice of the Bt tox in genes is depends upon the

- A. type of the crop
- B. type of targeted pest
- C. the type of vector
- D. both a and b

Answer: D



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7. The insecticidal protein in Bt cotton is binds to the

- A. foregut epithelial cells
- B. midgut mesothelial cells
- C. midgut epithelial cells
- D. hindgut mesothelial cells

Answer: C



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8. For increasing the food production which biotechnological application is applied

A. agro chemical based agriculture

B. organic agriculture

C. genetically engineered crop based
agriculture

D. all of the above

Answer: C



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9. Crystals of Bt toxin produced by some bacteria do not kill the bacteria themselves because

A. toxin is inactive

B. toxin is immature

C. bacteria are resistant to the toxin

D. bacteria enclose toxin in a special sac

Answer: A



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10. Strategy used to prevent nematode infection of tobacco roots is

A. use of agrochemicals

B. Bt toxin gene

C. gene mutation

D. RNA interface

Answer: D



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11. Insect pest resistant Bt cotton was developed by

A. somaclonal variation

B. micro propagation

C. transgenic technology

D. somatic hybridization

Answer: C



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12. Which is the correct match ?

A. Cry I ab - cortton bollworms

B. Cry I ac - cotton bollowrms

C. Cry I Ac - corn borer

D. Cry II Ab -corn borer

Answer: B



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13. Find the correct match

| | Column I | | Column II |
|----|--------------------|----|--------------|
| a. | Army worms | 1. | Dipteran |
| b. | Flies | 2. | Lepidopteran |
| c. | Beetles | 3. | Coelopteran |
| d. | Mosquitoes | | |
| e. | Tobacco budworm | | |

A. a-1,b-3,c-2,d-1,e-3

B. a-2,b-1,c-3,d-1,e-1

C. a-3,b-2,c-1,d-3,e-2

D. a-2,b-1,c-3,d-1,e-2

Answer: D



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14. The cry II Ab and cry I Ab produce toxins that control

A. cotton bollworm and corn borers
respectively

B. corn borers and cotton bollworms
respectively

C. tobacco budworms and nematodes
respectively

D. nematodes and tobacco budworms
respectively

Answer: A



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Section A Topicwise Questions Topic 2

Biotechnological Applications In Medicine

Genetically En

1. Correction of a genetic defect involves delivery of a normal gene into individual or embryo to take over the function of and compensate for the normal functional gene in called

A. genetic modification

B. genetic correction

C. gene therapy

D. bioremediation

Answer: C



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2. ADA deficiency is caused due to the

A. deletion

B. translocation

C. substitution

D. inversion

Answer: A



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3. Form which of the following techniques early detection is not possible

A. b,c and ce

B. a and d

C. a,d and e

D. b and e

Answer: B



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4. At present about a recombinant therapeutiecs have b of these are presently being marketed

A. a-70,b-25

B. a-50,b-18

C. a-30,b-12

D. a-33,b-19

Answer: C



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5. In probe the nucleic acid which is tagged with a radioactive molecule could be

A. a single stranded RNA

B. a single stranded DNA

C. A double stranded DNA

D. both a and b

Answer: D



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6. Maturation of proinsulin into insulin takes place after

A. joining of C peptide

B. removal of C peptide

C. removal of disulphide bridge

D. addition of disulphide bridge

Answer: B



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7. Recombinant therapeutics develop for curing human diseases are

A. 12

B. 24

C. 30

D. 56

Answer: C



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8. ADA deficiency results in

A. increased risk of infertility

B. inability of immune system of function normally

C. chromosomal disorders

D. decrease in yield of crop plants

Answer: B



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9. Some of the steps involved in production of humulin are given below. Choose the correct sequence

- (i) Synthesis of insulin gene artificially
- (ii) Culturing recombinant E. coli in bioreactors
- (iii) Purification of humulin
- (iv) Insertion and human insulin gene into plasmid
- (v) Introduction of recombinant plasmid into E. coli
- (vi) Extraction of recombinant gene product from E. coli.

A. ii,iiiv,iii,v,vi

B. I,iv,vii,vi,iii

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

D. iii,v,ii,vi,iv

Answer: B



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10. An abnormal gene is replaced by normal gene it is called

A. gene therapy

B. cloning

C. mutation

D. none of the above

Answer: A



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11. Product of biotechnology is

A. transgenic crop

B. biofertilizer

C. humulin

D. all of the above

Answer: D



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Section A Topicwise Questions Topic 3 Transgenic Animals

1. Select the incorrect statement

A. transgenic animals are used for study of complex factors involved in growth such as insulin like growth factor

B. transgenic animals are specially made to serve as models for human diseases so that investigation of new treatment for disease is made possible

C. first transgenic cow Rosie produced human protein enriched milk containing the human alpha lactoglobulin

D. Transgenic mice are being developed for use in testing the safety of vaccines before they are used on humans

Answer: C



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2. Transgenic animals that produce useful biological products can be created by the introduction of the portion of DNA (or genes) which codes for a particular product to treat

A. a,c and c

B. a and c

C. a and c

D. a,b and d

Answer: A



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3. Transgenic models exist for which of the following human diseases

A. a,b and c

B. a ,b and d

C. b,c d and e

D. a,b,c and e

Answer: B



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4. Read the following statements

A. 4

B. 3

C. 2

D. none of the above

Answer: A



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5. Transgenic plant are developed by

- A. introducing foreign genes
- B. introducing gene mutation
- C. deleting certain chromosome parts
- D. stopping spindle formation

Answer: A



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6. First transgenic plant released for commercial use was

A. Bt cotton

B. tobacco

C. golden rice

D. solan gola

Answer: B



Section A Topicwise Questions Topic 4 Ethical Issues

1. Transgenic animals are those which have

A. foreign DNA in some of its cells

B. Foreign DNA in all its cells

C. Foreign RNA in all its cells

D. DNA and RNA both in the cells

Answer: B



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2. A plant expressing a gene from another organism is

A. transgenic

B. clone

C. somaclonal variant

D. transformed

Answer: A



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3. The term used to refer to the use bio resources by multinational companies and other organisation without proper authorisation from the countries and people concerned without proper authorisation from the countries and people concerned without compensatory payment is

A. bioprospecting

B. biopiracy

C. biofortification

D. bioninformatics

Answer: B



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4. How many documented varieties of basmati rice are grown in india?

A. 200000

B. 50000

C. 1000

D. 27

Answer: D



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5. Select the correct statement

A. geac takes many issues into consideration including patent emergency provisions and and research and development initiative

B. indian parliament has recently cleared the second amendment of the indian patens bill which make decisions regarding the validity of gm research

C. transgenic model exist for many human disesases such as cystic fibrosis alzheimer

disease cancer and rheumatoid arthritis

D. all of the above

Answer: C



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6. Select the incorrect statement

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: D



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7. A regulatory body working for the release of transgenic crop is

A. ICWMI

B. IARI

C. IRRI

D. GEAC

Answer: D



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Section B Assertion Reasoning Questions

1. Assertion: Plants bacteria fungi and animals whose genes have been altered by manipulation are called GMO

Reason: GM has been used to create tailor made plants to supply alternative resources to industries in the form of starches fuels and pharmaceuticals

A. If both assertion and reason are true and the reason is the correct

explanation of the assertion

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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2. Assertion: Bt toxin is coded by a gene named cry

Reason : Bt toxin is coded by a gene named cry

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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3. Assertion: several nematodes parasitise a wide variety of plants and animals including human being

Reason: Ascariasis filariasis and taeniasis are some of the diseases caused by nematodes

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: C



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4. Assertion: The recombinant DNA technological processes have made immens impact in the area of healthcare by enabling mass production of safe and more effective therapeutic drugs

Reason: The recombinant therapeutics do not induce unwanted immunological responses as is common in case of similar products isolated from non human sources

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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5. Assertion: management of adult onset diabetes is possible by taking insulin at regular time intervals

Reason: Insulin can be orally administered to diabetic people

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: C



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6. Assertion: Insulin used in diabetes was earlier extracted from pancreas of slaughtered cattle and pigs

Reason: Insulin from an animal source caused some patients to develop allergy or other types of reactions to the foreign protein

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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7. Assertion: In mammals including humans insulin is synthesised as a pro hormone which contains an extra stretch called the C peptide

Reason: Like a pro enzyme the pro hormone also needs to be processed before it becomes a fully mature and functional hormone

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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8. Assertion: very low concentration of a bacteria or virus (at a time when the symptoms of the disease are not yet visible) can be detected by amplification of their nucleic acid by PCR

Reason: ELISA has been used to detect mutation in genes in suspected cancer patients

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: C



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9. Assertion: PCR is a powerful technique to identify many genetic disorders

Reason : ELISA is based on the principle of antigen antibody interaction

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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10. Assertion: Transgenic animals have been used for chemical or toxicity/safety testing

Reason: The procedure of chemical safety testing is the same as that used for testing toxicity of drugs

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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11. Assertion : Transgenic mice are being developed for use in testing the safety of vaccines

Reason: If successful and found reliable they could replace the use of monkeys to test the safety of batches of the vaccine

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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12. Assertion : Genetic modification of organisms can have unpredictable result when such organisms are introduced in to the ecosystem

Reason : The modification /usage of living organisms for public services (as food and medicine sources for example) has also created problem with patents granted for the same

A. If both assertion and reason are true
and the reason is the correct

explanation of the assertion

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B



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Section D Chapter End Test

1. which is correct about genetically modified sugar by america?

A. obtained patent of bacterial germplasm

B. brazzein obtained from gymnema

sylvestre is used in maize

C. protein obtained from lantana plant of

africa is used in maize

D. brazzein protein obtained from a frican
plant is used in maize.

Answer: D



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2. Bt cotton genes repel

A. bacterial pathogens

B. fungal pathogens

C. nematode parasites

D. insect pests

Answer: D



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3. Salt tolerant transgenic has been developed for

A. brinjal

B. potato

C. tomato

D. grape

Answer: C



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4. which of the following is a transgenic plant?

A. flavr savr

B. ashyba gossypii

C. meloidegyne incognitia

D. gluconobacter axidans

Answer: A



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5. Biopiracy is

A. exploitation of bioresources

B. patenting bioresources of other

C. use of bioresources without
authorisation

D. both b and c

Answer: D



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6. Giant mouse has been produced though

- A. tissue culture
- B. gene differentiation
- C. gene manipulation
- D. all of the above

Answer: C



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7. Genetically engineered human insuling is produced in

A. enthamoeba coli

B. yeast

C. escherichia coli

D. rhizopus

Answer: C



8. Bt cotton has been produced by

A. in situ hybridisation of bt gene

B. northern blotting of bt gene

C. cloning of bt gene

D. southern blotting of bt gene

Answer: C



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9. Introduction of food plants developed by genetic engineering is not desirable because

A. it will affect economy of developing countries

B. the products are less tasty

C. they are costly

D. there is danger of entry of toxins and virus in food

Answer: D





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10. Flaver savr variety of tomato is

- A. high yielding hybrid variety
- B. high yielding new variety
- C. transgenic
- D. polyoid

Answer: C



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11. production of human protein in bacteria by genetic engineering is possible because

A. human chromosomes replicate in bacterial cell

B. mechanism of gene regulation is identical in humans and bacteria

C. bacteria cell can undertake RNA splicing

D. genetic code is universal

Answer: D



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12. SCID is caused by defective gene coding for enzyme

- A. adenosine deaminase
- B. adenosone transaminase
- C. adenosine transferase
- D. adenosine diaminas

Answer: A



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13. A transgenic plant having higher storage protein is

A. rice

B. maize

C. tomato

D. potato

Answer: D



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14. In transgenics the expression of transgene in the target tissue is know by

A. enhanceer

B. transgene

C. promter

D. reporter

Answer: D



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15. Golden rice is variety rich in

A. β carotene and ferritin

B. lysine

C. vitamin C

D. Biotin

Answer: A



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

A. Insulin

B. Hamoglobin

C. somostatin

D. interferon

Answer: B



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

A. aids

B. scid

C. cystic fibrosis

D. musuclar dystrophy

Answer: B



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18. which of these is used as vector for gene therapy is scid and gene cloning in higher organisms?

A. retrovirus

B. enterovirus

C. arbovirus

D. rotavirus

Answer: A



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19. First hormone prepared artificially by culturing bacteria was:

A. inuslin

B. thyroxine

C. testosternone

D. adrenaline

Answer: A



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20. *Bacillus thuringiensis* forms crystals which contain insecticidal protein. This protein

A. binds with epithelial cells of mid gut of the insect pest ultimately killing it

B. is coded by several genes including the gene *cry*

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

D. Does not kill the carrier bacterium which is itself resistant to the toxin

Answer: A



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21. Cyanongen bromide is employed in

A. genetic finger printing

B. tissue culture

C. synthises of humulin

D. hybridoma technology

Answer: C



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22. this is not a GMO:

A. golden rice

B. tracy

C. bt brinjal

D. dolly

Answer: D



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

A. true

B. false proteins cannot be produced in semen

C. false protein cannot be produced in milk

D. false animals are not used for protein production

Answer: A



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24. Transgenic hirudin is obtained from:

A. *ocimum sanctum*

B. *brassica napus*

C. potato

D. tomato

Answer: B



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25. Golden rice is variety rich in

A. vitamin A

B. vitamin B

C. vitamin C

D. vitamin D

Answer: A



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26. Bt toxin is not toxic to human beings as

A. the toxin recognises only insect specific targets

B. bt toxin activation requires temperature above human body temperature

C. bt toxin formation from pro bt state require pH lower than one present in human stomach

D. conversation of pro bt to bt state takes place only in highly alkaline condition

Answer: D



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27. GM Bt brinjal has been developed in India for

A. enhancing shelf life

B. enhancing mineral content

C. drought resistance

D. insect resistance

Answer: D



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28. Golden colour of Rice is due to occurrence of

A. vitamin A

B. vitamin C

C. vitamin K

D. vitamin B_6

Answer: A



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29. Flavr Savr Tomato has increased

A. productivity

B. vigour

C. shelf life

D. flowerine period

Answer: C



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

A. cow

B. sheep

C. goat

D. pig

Answer: D



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31. GMO technology is useful for

A. making crops more tolerant to abiotic stresses

B. helping to reduce post harvest losses

C. enhancing nutritonal value of food

D. all of the above

Answer: D



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32. Protein products of Bt genes cry IAc and cry II Ab control

A. roundworm

B. moth

C. bollworm

D. fruitfly

Answer: C



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

A. biopatent

B. biotechnology

C. biowar

D. biopiracy

Answer: D



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

A. cancer

B. rehumatioid arthritis

C. alzheimer 's disease

D. emphysemA

Answer: D



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35. A genetic disorder can be cured through

A. gene therapy

B. rDNA technology

C. embryo transfer

D. hybridoma technology

Answer: A



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36. Which is not a pharmaceutical produce obtained through biotechnology

A. human insulin

B. clotting factor

C. cholecystokinin

D. human growth hormone

Answer: C



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37. Transgenic plants are plants having

A. no gene

B. gene in transposition

C. genes have no function to perform

D. genes of an other organism

Answer: D



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38. Bt in popular Bt-Cotton/Brinjal stands for

A. biotechnology

B. bacillus tomentosa

C. bacillus thuringiensis

D. best type

Answer: C



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39. Genetically engineered bacteria are being employed for production of

- A. melation
- B. testosterone
- C. human insulin
- D. thyroxine

Answer: C



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40. Transgenic animals have been used:

- A. for testing safety of vaccines
- B. for testing toxicity of drugs
- C. to produce usefull biological products
- D. all of the above

Answer: D



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41. Green Revolution succeeded in increasing the yield of the crops by a factor

A. 4

B. 3

C. 2

D. 5

Answer: B



42. Gene encoding Bt protein specific for cotton bollworm is

- A. cry II ac
- B. cry I ab
- C. Cry I Ac - corn borer
- D. both a and c

Answer: C



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43. Globular protein of $\sim 6kDa$ consisting of 51 amino acids arranged in two polypeptide chains held by disulphide bridge is

- A. insulin
- B. fibrinogen
- C. glucagon
- D. keratin

Answer: A



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

A. introducing bone marrow cells producing (ADA) into cells at an early embryonic stages

B. administration of adenosine deaminase activators

C. periodic infusion of genetically engineered lymphocytes having

functional ADA cDNA

D. Enzyme replacement therapy

Answer: A



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45. Bollworms attacks

A. bt cotton

B. tomato

C. cotton

D. bacillus thuringiensis

Answer: C



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

A. 19977

B. 1980

C. 1997

D. 1990

Answer: B



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47. Which is obtained from genetic engineering

A. glucose

B. haemoglobin

C. goldine rice

D. none of the above

Answer: C



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48. cDNA is

A. circular DNA

B. colied DNA

C. cytoplasmic DNA

D. complementary DNA

Answer: D



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49. Bt toxin is :

A. protein

B. carbohydrate

C. lipid

D. enzyme

Answer: A



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50. First genetically modified plant commercially released in India is

A. golden rice

B. bt brinjal

C. slow ripening tomato

D. bt cotton

Answer: D



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Others

1. Golden rice will help in

A. producing petrol like fuel

B. pest resistance

C. herbicide tolerance

D. alleviation of vitamin A deficiency

Answer: D



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2. Which is used in production of insulin by genetic engineering ?

A. rhizobium

B. sacchormyces

C. mycobacterium

D. escherichia

Answer: D



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3. The bacterium *Bacillus thuringiensis* is widely used in contemporary biology as

A. source of industrial enzyme

B. insecticide

C. indicator of water pollution

D. agent for production of dairy products

Answer: B



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4. What is true of Bt toxin?

A. the concerned bacillus has antitoxin

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

C. bt protein exist as active toxin in the
bacillus

D. the activated toxin enters the ovaries of
the pest to sterilize it and thus prevents
its multiplication

Answer: B



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5. Genetic engineering has helped in production of

A. thyroxine

B. insulin

C. parathormone

D. epinephrine

Answer: B



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6. Which is true?

- A. centromere is found in animals cells
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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7. Some of the characteristics of Bt cotton are

A. medium yield long fibre and resistance to beetle pests

B. high yield and production of toxic protein crystals which kill dipteran pests

C. high yield and resistance to bollworms

D. long fibre and resistance to aphids

Answer: B



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8. An improved variety of transgenic basmati rice

A. gives high yield and rich in vitamin A

B. Is completely resistant to all insect pests and diseases of paddy

C. gives high yield but has no characteristic aroma

D. does not required chemical fertilizers and growth hormones

Answer: A



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9. Genetic engineering has been successfully used for producing

A. transgenic models for studying new treatment for certain cardiac diseases

B. transgenic cow Rosie which produces high fat milk for making ghee

C. animals like bulls for farm work as they
have super power

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

Answer: D



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10. Read statement a-d which two of them
have mistakes?

A. first transgenic buffalo rosie produced milk which was human apha lactalbumin enriched

B. restriction enzymes are used in isolation of DNA from other macromolecules

C. downstream processing is one of the steps of rDNA technology

D. disarmed pathogen vectors are also used in transfer of rDNA into the host

Answer: D



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11. Silencing of mRNA/RNA interference has been used in development of plants resistant to

A. viruses

B. insects

C. fungi

D. nematodes

Answer: D



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12. Maximum number of existing transgenic animals is of

A. cow

B. pig

C. mice

D. fish

Answer: C



13. The problem of blindness in poor countries can be overcome by using

- A. golden rice
- B. transgenic maize
- C. transgenic tomato
- D. bt brinjal

Answer: A



14. First clinical application of gene therapy was used in 1990 over a four year old girl for

- A. adnosine deficiency
- B. adenine deficiency
- C. growth deficiency
- D. adenosine deaminase deficiency

Answer: D



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15. Tobacco plants resistant to nematodes have been developed by introductions of DNA that produces

- A. both sense and antisense RNA
- B. an antifeedant
- C. a toxic protein
- D. a particular hormone

Answer: A



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16. Basic principle for developing transgenic plants and animals to introduce the gene of interest in to nucleus of

A. body cell

B. vegetative cell

C. germ cell

D. somatic cell

Answer: C



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17. RNA interference is usefull for

A. micropropagation

B. cell defence

C. cell proliferation

D. cel differentiation

Answer: B



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18. Which of the following Bt crops is being growth in india by the farmers?

A. brinjal

B. soyabean

C. maize

D. cotton

Answer: D



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19. RNA interference involves

A. synthesis of cDNA and RNA using reverse transcriptase

B. silencing of specific mRNA in due to complementary RNA

C. Interference of RNA synthesis of DNA

D. Synthesis of mRNA from DNA

Answer: B



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20. Which vector is used to replace defective gene in gene therapy

A. adenovirus

B. cosmid

C. ri plasmid

D. ti plasmid

Answer: A



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21. Genetically modified crops can be produced by

A. progesterone

B. insulin

C. estrogen

D. thyroxin

Answer: A



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

A. progesterone

B. insulin

C. estrogen

D. thyroxin

Answer: B



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

A. vitamin C

B. omega 3

C. vitamin A

D. vitamin B

Answer: C



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24. In Bt cotton the Bt toxin present in plant tissue as protoxin is converted in to active toxin due to

A. Action of gut micro organisms

B. presence of conversion factors in insect gut

C. alkaline pH of the insect gut

D. acidic pH of the insect gut

Answer: C



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25. which body of the government of india regulates GM reserch and safety of introducing GM organisms of public services ?

A. genetic engineerign approval committee

B. resarech committee on genitc manipulation

C. bio safety committee

D. indian council of agrigular research

Answer: A



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26. Bt endotoxin that exists as inactive protoxin is converted into active toxin once bollworm ingests it due to

- A. alkaline pH in gut
- B. acidic pH in gut
- C. activity of protease enzyme in gut
- D. high metabolic activity in gut

Answer: A



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27. Which part of the tobacco plant is infected by *meloidogyne incognita*?

A. stem

B. root

C. flower

D. leaf

Answer: B



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28. Which kind of therapy was given in 1990 to a four year old girl with adenosine deaminase (ADA) deficiency?

- A. immunotherapy
- B. radiation therapy
- C. gene therapy
- D. chemotherapy

Answer: C



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29. Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes?

A. retrovirus

B. Ti plasmid

C. λ phage

D. pBR 322

Answer: A



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30. In india organisation responsible for assessing the safety of introducing genetically modified organisms for public use is

A. indian council of medical research (ICMR)

B. council for scientific and industrial research (CSIR)

C. reseach committee on genetic
manipulation (RCGM)

D. genetic engineering appraisal
committee (GEAC)

Answer: D



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31. Use of bioresource by mutinational (GEAC)
organisation without authorisation from the
concerned country and its people is called

A. bio infringement

B. biopiracy

C. biodegradation

D. bioexploitation

Answer: B



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32. Introduction of foreign genes for improving genotype is

Or

Insertion or deletion of one or more new genes which are absent in an organism by artificial method (not by reproduction) is called as

- A. tissue culture
- B. vernalization
- C. genetic engineering
- D. eugenics

Answer: A



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33. which one of the following is a correct statement ?

A. Bt' in 'Bt' cotton indicates that it is a genetically modified organism produced through biotechnology

B. somatic hydization involves fusion of two complete plant cells carrying desired genes

C. somatic hybridization involves fusion of two complete plant cells carrying desired genes

D. the anticoagulant hirudin is being produced from transgenic brassica napus seeds

Answer: A



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34. Electroporation procedure involves:

A. fast passage of food through sieve pores

in phloem elements with the help of
electric stimulation

B. opening of stomatal pores during night

by artificial light

C. making transient pores in the cell

membrane to introduce gene constructs

D. purification of saline water with the help
of a membrane system

Answer: A



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35. In the following table identify the correct
matching of the crop its decrease and the
corresponding pathogen



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36. Hirudin is

A. a protein produced by *hordeum vulgare*

which is rich in lysine

B. a toxic molecule isolated from

Gossypium hirsutum which reduces

human fertility

C. a protein produced from transgenic

Brassica napus which prevents blood

clotting

D. an antibiotic produced by geneitcally
engineered bacterium escherichia coli

Answer: A



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37. 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. introduction of gene for adenosine deaminase in persons suffering from severe combined immunodeficiency (scid)

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

Answer: A



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38. 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 enzymes and ligases

D. carrying an endotoxin gene from bacillus thuringiensis

Answer: A



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39. cDNA probes are copied from the messenger RNA molecules with the help of

- A. restriction enzymes
- B. reverser treanscrtiptase
- C. DNA olyermase
- D. adenosine deaminase deficiency

Answer: A



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40. Natural genetic engineers of plants is

A. yeast

B. agrobacterium tumefaciens

C. e coli

D. mycoplasma

Answer: B



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

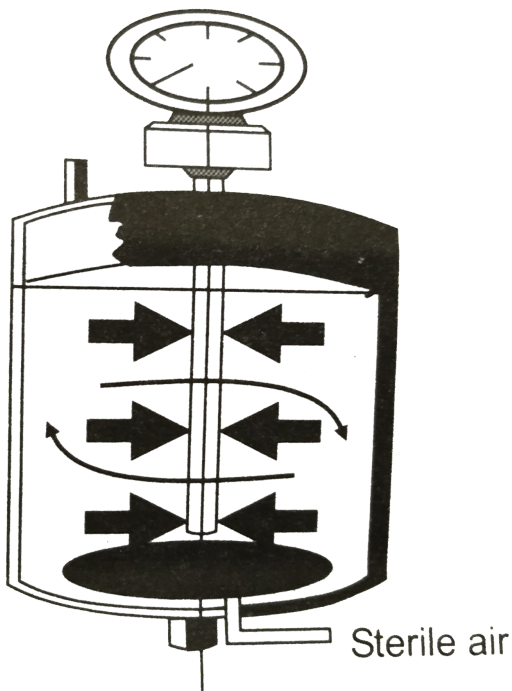
- A. high lysine (essential amino acid) content
- B. insect resistance
- C. high protein content
- D. high vitamin A content

Answer: A



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42. Indentify the correcty match for the given apparatus



A. gene gun transfer vectorless direct gene
tra

B. column graph , sepearation of
chlorophyll chromatopigments

C. stirred tank process carry out

fermentation bioreactor

D. respirometer respiration finding out rate

of

Answer: A



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

A. adenosine deaminase (ADA)

B. tyrosine oxidase

C. monamine oxidase

D. monamine oxidase

Answer: A



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44. Which organism is used to transfer T-DNA?

A. streptomyces hygroscopicus

B. agrobacterium tumefaciens

C. salmonella tyuphi

D. escherichia coli

Answer: B



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45. An example of gene therapy is

A. bt cotton

B. flavr savr tomato

C. pusa swarnim

D. golden rice

Answer: A



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46. Which of the following is not a genetically modified plant?



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47. Assertion : *Agrobacterium tumefaciens* is popular in genetic engineering because this bacterium is associated with the roots of all cereal and pulse crops.

Reason : A gene incorporated in the bacterial chromosomal genome gets automatically transferred to the crop with which the bacterium is associated .

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

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

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A



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48. Assertion: Insect resistant transgenic cotton has been produced by inserting Bt gene

Reason The Bt gene is derived from a bacterium

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of

the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are
false

Answer: A



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49. Assertion : GM foods are facing
widespread resistance by the people

Reason : GM foods hve mutated genes which cause infections and alleriges

A. If both assertion and reason are ture and the reason is a correct explanation of the assertin

B. If both assertion and reason are ture but reason is not a correct edplanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A



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50. Assertion : both bacteria and yeasts multiply very fast to form huge population which express the desired gene

A. correct

B. not correct

C.

D.

Answer: A



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