BIOLOGY

NEET & AIIMS

BIOTECHNOLOGY AND ITS APPLICATIONS

Example

1. How many recombinant therapeutics are being marketed in India ?

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2. Which peptide chain is removed during maturation of proinsulin

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3. The first clinical gene therapy was given to a girl with which enzyme deficiency?

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4. Suggest some conventional method used evaluation for detection of diseased state.

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5. Expand 'ELISA'. Why is this method preferred over conventional methods of diagnosis of diseases ?

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6. Give one word for the following:

Technique used to detect hybridisation of a radiolabelled probe to its complementary uncleotide sequence on a photographic film.

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7. Transgenic animals have been created that can produce $\alpha - 1$-antitrypsin in their milk. This protein is used to treat which disorder?

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8. What does GEAC stand for ?

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Try Yourself

1. The Green Recolution succeded in _____ the food supply but yet it was not enough to feed the growing human population.

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2. List one obstacle faced by implementation of Green Revolution by farmers in developing world.

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3. How has the problem of blindness in poor countries been alleviated by work done by Prof. Ingo Potrykus?

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4. Why is Golden Rice called so?

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5. Mention one function of the protein hirudin.

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6. Name the vector used for introducing gene for hirudin into Brassica napus seed plant.

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7. Why is Bt toxin an endotoxin?

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8. Name the gene that encodes protein controlling growth of corn borer.

 Watch Video Solution

9. In which part of insect's alimentary canal does Bt toxin become active?

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10. Why is the gene coding for Bt toxin called 'cry'?

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11. RNAi takes place in all prokaryotic organisms. State True/False.

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12. Meloidegyne is classified under which phuylum of animal kingdom?

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13. Suggest a source of complementary RNA introduced into target cell that can intitiate RNAi.

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14. Which vector has employed for introducing nematode-specific genes in infected tobacco plants?

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15. Name the protein whose expression was altered that allowed tomatoes to remain fresh and retain flavour.

Watch Video Solution

16. Name the organism with which the discovery of RNAi is associated.

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17. Antisense RNA used for silencing a ceellular mRNA in RNAi has sequence complementary to antisense strand of mRNA.

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18. If the sequence of sense mRNA is 5' GCGUAACGCU3', then sequence of antisense RNA is 3' AGCGUUACGC5'.

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19. How many recombinant therapeutics worldwide have been approved for human use ?

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20. Which recombinant vaccine is being currently synthesized in india too?

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21. Name the company associated with preparation and marketing of humulin on large scale in world.

Watch Video Solution

22. How many amino acids are present in completely mature insulin?

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23. What is the major problem if a person lacks ADA?

Watch Video Solution

24. Which vector is used introduce a functional ADA cDNA into the lymphocytes?

Watch Video Solution

25. Which molecular diagnostic technique can be used to defeet HIV infection?

Watch Video Solution

26. Technique such as RFLP used for early diagnosis of disease is a modern method of conventional diagnostie teehnique (True/False).

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27. Name the most commonly used enzymes in ELISA.

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28. What is the basis of detection using ELISA test?

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29. What is a probe?

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30. Which part of the body is affected by Emphysema?

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31. Name the protein found in enriched milk produced by first transgenic cow, Rosie.

Watch Video Solution

32. Use of bio-resources by multinational companies and other organisations without proper authorisation from the countries and people concerned without compensatory payment is termed as

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Exercise

1. Father of Green Revolution in India is:

A. Norman Emest Borlaug

B. Verghese Kurien

C. Ernst Mayr

D. Eli lilly

Answer: A

Watch Video Solution

2. Name the scientists associated with development of Golden Rice

A. Ingo Potrykus and Peter Beyer

B. Milstein and Kohler

C. Stanley Miller and Harold Urey

D. Stanley Cohen and Herbert Boyer

Answer: A

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

A. c,y IIAb

B. cry IAc

C. Both (1) & (2)

D. cry IAb

Answer: C

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4. What does 'Bt' in Bt toxin represent?

A. Bioterrorism

B. Bleeding ·toxin

C. Bacillus thuringiensis

D. Blue tooth toxin

Answer: C

Watch Video Solution

5. Which type of pH conditions are required for action by Bt toxin?

A. 8.6

B. 1

C. 7

D. 6.8

Answer: A

 Watch Video Solution

6. Which organism is held responsible for causing root-knots in food and fibre crops especially tobacco?

A. Caenorhabditis elegans

B. Meloidegyne incognita

C. Nicotiana tobaccum

D. Ascaris

Answer: B

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7. Mark the option that fill in the blanks suitably :

Using _____ vectors, nematode-specific genes

were introduced into the host plant for pest resistance.

A. Streptococcus

B. Bacillus anthracis

C. Agrobacterium

D. Haemophilus influenzae

Answer: C

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8. Give example of a GM crop that can tolerate abiotic stress.

A. Transgenic tomato

B. Bt-Brinjal

C. Golden rice

D. Pomato

Answer: A

Watch Video Solution

9. In "flacr savr" tomato, expresssion of a native tomato gene has been blocked to

A. Prevent degradation of cellulose in cell wall

B. Cause degradation of cellulose in ceH Well

C. Prevent degradation of pectin in Cell Wall

D. Cause degradation of pectin in cell wall

Answer: C

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

A. Hirudin

B. Heparin

C. Polygalacturonase

D. Cry protein

Answer: A

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

A. Bone marrow transplantation upon detection of disorder in adult

B. Enzyme replacement therapy at any point 'in life

C. Both (1) & (2)

D. Gene therapy at early embryonic stages

Answer: D

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

A. Factor VIII

B. Antithrombin II

C. $alphA-1$-antitrypsin

D. Lysostaphin

Answer: A

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

A. A.R. Bounting

B. Eli Lilly

C. Charles Weissmann ·

D. A. Tiselius

Answer: C

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14. Select the incorrect statement

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

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

molecule

C. Complementary nucleic acid could be from mobile genetic elements (transposons)

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

Answer: B

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

A. β-lactamase

B. β-galactosidase

C. Poly galacturonase

D. Chitinase

Answer: B

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16. Transgenics have provided many pharamaceuticals in their milk, for treatment of diseases. Which one of the following has not been a successful story?

A. Phenylketonuria

B. SCID

C. Emphysema (hereditary)

D. CFTR

Answer: B

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

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

B. Rosie's milk contained human gene-insulin

C. Transgenic cows produce milk with less fat

D. Transgenic sheep grow more wool

Answer: B

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18. Choose the incorrect statement.w.r.t, Bioweapons

A. They are fow cost weapons

B. They cause more casualities than conventional weapons

C. They are extremefy dfficult to detect

D. Bacterium E. coli created letter scare in 2001

Answer: D

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

A. Biopatent

B. Biopiracy

C. Patent

D. Bioethics

Answer: D

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

A. Cow

B. Sheep

C. Goat

D. Buffalo

Answer: C

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Assignment Section A Objecive Type Questions

1. Select the incorrect statement w.r.t Green Revolution.

A. Succeeded in quadrupling the food supply

B. Increase. was insufficient to feed the growing human population

C. Increased yields could be attributed to improved crop varieties

D. Use of agrochemicals contributed to enhanced yields

Answer: A

Watch Video Solution

2. Methods of producing microbe and pest resistant plants include

A. RNAi

B. Use of Bt toxin

C. Gene therapy

D. Both (1) & (2)

Answer: D

Watch Video Solution

3. Which of the following is not an advantage of GM crops?

A. Increased crop tolerance to salt in soil

B. Increased reliance on chemical pesticides

C. Reduction in post harvest losses

D. Increased efficiency of mineral usage

Answer: B

Watch Video Solution

4. Production of pest resistant plants could

A. Increase the amount of pesticide used

B. Increase the amount of weedicide used

C. Decrease the amount of pesticide used

D. Both (2) & (3)

Answer: C

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5. Identify the gene and its protein that controls corn borer from the given options

A. Cry I Ab and Cry I Ab

B. Cry I Ac and Cry I Ac

C. Cry II Ab and Cry II Ab

D. Cry II Ac and Cry II Ac

Answer: A

6. Crystallline protein synthesized by Bacillus thuringiensis is activated by

A. Acidic conditions of bacterial food vacuole

B. Alkaline pH bacterial food vacuole

C. Acidic pH in insect fore-gut

D. Alkaline pH in insect mid-gut

Answer: D

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

A. Saccharomyces

B. E.coli

C. Mycobacterium

D. Agrobacterium

Answer: B

Watch Video Solution

8. Bt toxin kills the insect by

A. Blocking mitochondrial respiration

B. Blocking transfer of nerve impulse

C. Creating pores in body.surfa~e

D. Creating pores in mid-gut epithelial cell

Answer: D

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9. How many recombinant therapeutics worldwide have been approved for human use ?

A. 12

B. 30

C. 42

D. 27

Answer: B

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10. Which of the following may be considered as an application of biotechnology?

A. Bioremediation

B. Waste treatment

C. Energy production

D. All of these

Answer: D

Watch Video Solution

11. Which peptide chain is removed during maturation of proinsulin

A. D chain

B. C chain

C. B Chain

D. A chain

Answer: B

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12. Why would lac z gene be fused to coding sequence of chain A and B in plasmids of E.coli?

A. Helps to form blue insulin which is more effective

B. Helps in selection of recombinant

C. Help in oral administration of insulin

D. All of these

Answer: B

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

A. Monoamine oxidase

B. Tyosine oxidase

C. Pyruvate dehydrogenase

D. Adensine deaminase

Answer: D

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14. Animal that have their DNA manipulated to possess and express an extra (foreign) gene are known as-----

A. Foreign animals

B. Superior animals

C. Transgenic animals

D. Elevated animals

Answer: C

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15. About what precentage of all existing transgenic animals are mice?

A. 75

B. 95

C. 100

D. 50

Answer: B

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16. If a probe is made of radioactively labelled dsDNA and is allowed to hybridise to its complementary DNA in a cloried cell followed by detection using autoradiography. Which of the following is considered wrong for the given statements?

A. It is double stranded DNA

B. It is radioactively labelled

C. This probe can be used in autoradiography

D. It is hybridise to complementary DNA/RNA

Answer: A

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17. Techniques that serve the purpose of early diagnosis include

A. PCR

B. ELISA

C. Serum analysis

D. Both (1) & (2)

Answer: D

 Watch Video Solution

18. A human protein which is being obtained from transgenic animals and is used to treat emphysema is

A. α-lactalbumin

B. TPA

C. α-1-antitrypsin

D. C-peptide

Answer: C

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

A. RTI Act

B. NGO Act

C. Indian patents Bill

D. Biopiracy_ Act

Answer: C

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20. How many documented varities of basmati rice are grown in india?

A. 30

B. 27

C. 118

D. 42

Answer: B

 Watch Video Solution

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

A. Protein content of 2.4 g/L

B. Human $alpah$-lactalbumin

C. More balanced diet than normal cow milk for babies

D. Was produced for first time in year 2001

Answer: D

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22. Which Indian plants have either been patented or attempts have been made to patent them by western nations for their commercial use ?

A. Daffodil

B. Neem

C. Turmeric

D. Both (2) & (3)

Answer: D

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23. Repeated transfusions of genetically modified cells are required in SCID patients and in enzyme replacement theraphy because

A. Transfused cells have a limited life span

B. Introduced gene has been mutated

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

D. Both (1) & (3)

Answer: D

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24. The bacterum Bacillus thuringiensis is widely used in contemporary biology as

A. Bioweapon

B. Bioinsecticide

C. Bioweedicide

D. Indicator of water pollution

Answer: B

Watch Video Solution

25. Which of the following is a transgenic plant

A. Flavr savr

B. Meloidogyne incognita

C. Caenorhabditis elegans

D. Oryza sativa

Answer: A

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Assignment Section B Objecive Type Questions

1. Hirudin can be extracted from transgenic plant

A. Brassica napus

B. Bacillus napus

C. Bt brinjal

D. Bt Brassica napus

Answer: A

 Watch Video Solution

2. Select incorrect statement w.r.t. RNAi

A. dsDNA binds target mRNA and initiate RNAi

B. Agrobacterium vector is used to introduce nematode specific gene into

host plant

C. ssRNA binds target mRNA and initiate RNAi

D. Both (2) & (3)

Answer: A

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3. Nobel prize was given to Andrew Fire and Craig Mello for their work on RNAi on

A. Meloidogyne inognita

B. Caenorhabditis elegans

C. Bacillus thuringiensis

D. Brassica napus

Answer: B

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4. Infestation by tobacco budworm and armyworm is prevented by BT toxin. These

insects belong to order prevented by Bt toxin.

These insects belong to order

A. Coleoptara

B. Lepidoptara

C. Diptara

D. Hymenoptara

Answer: B

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5. Which of the following is correct statement w.r.t. animal insulin?

A. It is just as effective as human insulin over prolonged time

B. It does not elicit immune response ever

C. It can be orally administrated to diabetic people

D. It was extracted from pancreas of slaughtered cattle and pigs

Answer: D

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6. Injecting functional adenosine deaminase into a patients (lacking ADA gene) blood cells may be considered as

A. Gene therapy

B. Enzyme replacement therapy

C. Both (1) & (2)

D. Genetic engineering

Answer: B

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7. The main challenge for production of insulin using rDNA techniques was getting insulin into matured form using _____ bond

A. Hydrogen

B. Peptide

C. Ionic

D. Disulphide

Answer: D

Watch Video Solution

8. Which technique is now routinely used to detect HIV in suspected AIDS patients ?

A. PCR

B. Serum analysis

C. Both (1) & (2)

D. Urine analysis

Answer: A

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9. Use of bio-resources by multinational companies and other organisations without proper authorisation from the countries and people concerned without compensatory payment is termed as

A. Bioethics

B. Biopiracy

C. Bioterror

D. Bioeweapon

Answer: B

Watch Video Solution

10. Which vector is used introduce a functional ADA cDNA into the lymphocytes?

A. Agrobacterium

B. Reovirus

C. E.coli

D. Retrovirus

Answer: D

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

A. Sharbati sonara

B. Co-667

C. Basrhati

D. Lerma Roja

Answer: C

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

A. Protein

B. Carbohydrate (starch)

C. β-carotene

D. Na^+

Answer: C

Watch Video Solution

13. Select the incorrect match

A. Cry I Ab - Com borer

B. Bt toxin - Beetles

C. Cry I Ac - Cotton Bollworm

D. ctylIAc - Cotton Bollworm

Answer: D

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14. A doctor while operating on an HIV (+)ve patient accidentally cuts himself with a scalpel. Suspecting himself to have contracted the

virus which test will he take to rule out/confirm his suspicion ?

A. Serum analysis

B. Unine analysis

C. Blood analysis

D. PCR

Answer: D

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15. Disadvantage of using porcine insulin in diabetic patients

A. That it may lead ro hypercalcemia

B. It may cause allergic reactions

C. It is expensive

D. It can lead to mutations in adult

Answer: B

Watch Video Solution

16. In ELISA TEST substance used is

A. Endonudease

B. Ligase

C. Peroxidase

D. Polymerase

Answer: C

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17. A probe is used in which stage of genetic engineering?

A. Cleaving DNA

B. Recombining DNA

C. Cloning

D. Screening

Answer: D

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18. Which of the following is not an application of genetic engineering in plants?

A. Nitrogen fixation

B. DNA vaccines

C. Resistance to glyphosate

D. Production of insecticidal proteins in plants

Answer: B

Watch Video Solution

19. Which of thedollowing genetically engineered microbe is used in scavening of oil spills by digesting hydocarbons of crude oil?

A. Pseudomonas fluorescence

B. Rhizobium meliloti

C. Pseudomonas pitida

D. Trichoderma

Answer: C

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20. All the following statements are correct for Bt toxin but one is wrong. Which one is wrong?

A. St toxin is produced by bacteria called Bacillus thuringiensis

B. St toxin are protein toxins like thurioside and sporeine which are active against different group of insects

C. Bt toxin is harmful for man

D. Upon ingestion by susceptible insects the Bt protoxin is converted into active form and kills the insects

Answer: C

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21. An example of gene therapy is

A. Production of antibodies and vaccines in transgenic plants like banana and

tomato

B. Delay in flower senescence and fruit ripening in Flavr Savr transgenic tomatoes which have longer shelf life

C. Introduction of the gene for the synthesis of ADA (adenosine deaminase) into a person suffering with SCID

D. Transfer of nitrogen fixing genes ('nif' genes). into plants that are unable to fix

· atmospheric nitrogen, example cereals

Answer: C

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22. Eli Lilly an American company is famous for

A. Producing GH (growth hormone) synthesised by recombinant DNA technology

B. Preparing two DNA sequences corresponding to A and B chains of

human instJlin and introduced them in the plasmids of E. coli to produce insulin chains

C. Producing pest resistant plants, by RNA interference

D. Producing vitamin 'A' enriched rice

Answer: B

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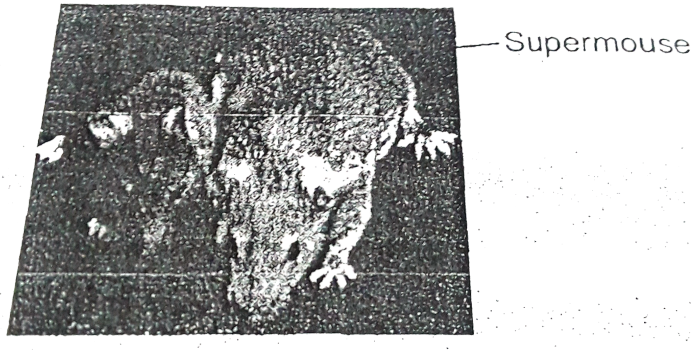
23. What is the difference between the two mice as shown as in the figure?



A. One is normal in size, the other is twice as big supermouse because of good diet

B. The bigger 'Supermouse' is transgenic. It is larger because of expression of the

gene for human growth hormone factor that has been introduced

C. The smaller one is a dwarf

D. Transgenic mice are an example of gene therapy

Answer: B

 Watch Video Solution

24. What could be the possible harm of using antibiotic resistant gene as a selectable marker in plasmid, used for gene transfer in production of GM food?

(A) GM food contains the enzyme produced by the antibiotic resistance gene that was used during gene tranfer in genetic engineering. This could cause allergies since it is a foreign protein.

(B) The bacteria present in the alimentary canal of the humans could take up the antibiotic resistance gene present in GM food.

(C) The bacteria in the human alimentary canal would then become resistant to the concerned antibiotic.

(D) The transgene may be transferred through pollen to their wild relattves and make weeds more persistant and damaging.

A. A only

B. Both B and C

C. A,B and C

D. A,B,C and D

Answer: C

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

A - Reduce herbicide accumulation in food articles for health safety.

B - Eliminate weeds in the field without the use of herbicides

C - Eliminate weeds from the field without the use of manual labour.

D - Soil pollution and biomagnification caused by herbicides.

Which of the following statements are correct?

A. A only

B. B only

C. A,B,C and D

D. C only

Answer: D

Watch Video Solution

Assignment Section C Previous Years Questions

1. The process of separation and purification of expressed protein before marketing is called

A. Upstream processsing

B. Downstream processing

C. Bioprocessing

D. Postprodction processing

Answer: B

Watch Video Solution

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

A. Gene therapy

B. Chemotherapy

C. Immunotherapy

D. Radiation therapy

Answer: A

Watch Video Solution

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

A. Root

B. Flower

C. Leaf

D. Stem

Answer: A

Watch Video Solution

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

A. Disulphide bridges

B. hydrogen bonds

C. Phosphodiester bond

D. Covalent bond

Answer: A

Watch Video Solution

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

A. Vitamin A

B. Vitamin B

C. Vitamin C

D. Omega 3

Answer: A

 Watch Video Solution

6. The introduction of t-DNA into plants involves

A. Allowing the plant roots to-stand in water

B. Infection of the plant by Agrobacterium tumefaeiens

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

D. Exposing the plants to cold for a brief period

Answer: B

 Watch Video Solution

7. The crops engineered for glyphosate are resistant/tolarant to

A. Herbicides

B. Fungi

C. Bacteria

D. Insects

Answer: A

 Watch Video Solution

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

A. Presence of conversion factors in insect gut

B. Alkaline pH of the insect gut

C. Acidic pH of the insect gut

D. Action of gut micro-organisms

Answer: B

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

A. Research Committee on Genetic Manipulation

B. Bio-safety committee

C. Indian Concil of Agricultural Research

D. Genetic Engineering Approval Committee

Answer: D

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10. In vitro clonal propagation in plants is characterized by

A. PCR and RAPD

B. Northern blotting

C. Electrophoresis and HPLC

D. Microscopy

Answer: A

Watch Video Solution

11. Commonly used vectors for human genome sequencing are

A. T-DNA

B. BAC and Y AC

C. Expression vectors

D. T / A cloning vectors

Answer: B

 Watch Video Solution

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

A. Insulin

B. Estrogen

C. Thyroxin

D. Progesterone

Answer: A

 Watch Video Solution

13. An analysis of chromosomal DNA using the southern hybridization technique does not use

A. Electrophoresis

B. Blotting

C. Autoradiography

D. PCR

Answer: D

Watch Video Solution

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

A. Cotton

B. Brinjal

C. Soybean

D. Maize

Answer: A

 Watch Video Solution

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

A. Golden rice

B. Bt-Brinjal

C. Flaver Savr' tomato

D. Canolla

Answer: A

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

A. Adenosine deaminase deficiency

B. Diabetes mellitus

C. Chicken pox

D. Rheumatoid arthritis

Answer: A

Watch Video Solution

17. A single strand of nucleic acid tagged with a radioactive molecule is called:

A. Plasmid

B. Probe

C. Vector

D. Selectable

Answer: B

Watch Video Solution

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

A. Both sense and anti-sense RNA

B. A particular hormone

C. An antifeedant

D. A toxic protein

Answer: A

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19. Maximum number of existing transgenic animals is of:

A. Pig

B. Fish

C. Mice

D. Cow

Answer: C

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20. Read the following four statements (A-D)

A. The first transgenic buffalo, Roise produced milk which was human alpha-lactalbumin enriched

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

C. Downstream processing is one of the step of rDNA technology

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

which of the two statements have mistakes ?

A. (A) & (C)

B. (A) & (B)

C. (B) & (C)

D. (C) & (D)

Answer: B

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

A. Is activated by acid pH of the foregut of the insect pest

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

C. Binds with epithelial cells of midgut of the insect pest ultimately killing it

D. Is coded by several genes including the gene cry

Answer: C

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

A. White rusts

B. Bacterial blights

C. Bollwroms

D. Nematodes

Answer: D

 Watch Video Solution

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

A. Insects

B. Nematodes

C. Furgi

D. Viruses

Answer: B

Watch Video Solution

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

A. Drought-resistance

B. Insect-resistance

C. Enhancing shelf life

D. Enhancing mineral content

Answer: B

Watch Video Solution

25. Genetic engineering has been successfully used for producing

A. Animals like bulls for farm work as they have super power

B. Transgenic mice for testing safety of polio vaccine before use in humans

C. Transgenic models for studying new treatments for certain cardiac diseases

D. Transgenic Cow-Rosie which produces high fat milk for making ghee

Answer: B

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

A. High yield and resistance to bollworms

B. Long fibre and resistance to aphids

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

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

Answer: A

Watch Video Solution

27. DNA or RNA segment tagged with a radioactive molecule is called :

A. Plasmid

B. Vector

C. Probe

D. Clone

Answer: C

Watch Video Solution

28. An improved variety of transgenic basmati rice

A. Does not require chemical fertilizers and growth hormones

B. Gives high yield and is rich in vitamin A

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

D. Given high yield but has no characterstic aroma

Answer: C

Watch Video Solution

29. Which one of the following is now being commercially produced by biotechnological procedures?

A. Nicatine

B. Morphine

C. Quinine

D. Insulin

Answer: D

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30. Polyethylene glycol method is used for

A. Biodiesel production

B. Seedless fruit production

C. Energy production from sewage

D. Gene transfer without a vector

Answer: D

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31. What is true about Bt toxin?

A. Bt protein exists as active toxin in the Bacillus

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

C. The concerned Bacillus has antitoxins

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

Answer: D

32. Transgenic plants are the ones:

A. Generated by introducing foreign DNA into a cell and regenerating a plant from that cell

B. Produced after protoplast fusion in artificial medium

C. Grown in artificial medium after hybridization in the field.

D. Produced by a somatic embryo in artificial medium.

Answer: A

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33. The bacterium Bacillus thuringiensis is widely used in contemporary biology as a/an

A. Insecticide

B. Agent for production of dairy products

C. Source of industrial enzyme

D. Indicator of water pollution

Answer: A

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

A. Meloidogyne inognita

B. Agrobacterium tumefaciens

C. Penicillium expansum

D. Trichoderma harzianum

Answer: B

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

A. Administering adenosine deaminase activators

B. Introducing bone marrow cells producing ADA mto cells at early embryonic stages

C. Enzyme replacement therapy.

D. Periodic infusion of genetically engineered lymphocytes having

functional ADA cDNA

Answer: B

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

A. Golden rice

B. Flavr Savr tomatoes

C. Starlink maize

D. Bt Soyabean

Answer: A

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37. Cry 1 endotoxins obtained from Bacillus Thuringiensis are effective against

A. Boll worms

B. Mosquitoes

C. Flies

D. Nematodes

Answer: A

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38. what is antisense technology

A. RNA polymerase producing DNA

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

C. Production of somaclonal variants in tissue cultures

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

A. Reduce herbicide accumulation in food articles for health safety

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

C. Eliminate weeds from the field without the use of herbicides

D. Encourage eco-friendly erbicides

Answer: B

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

A. Bacillus

B. Pseudomonas

C. Trichoderma

D. Xanthomonas

Answer: B

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41. Golden rice is a promising transgenic crop.

When released for cultivation , it will help in:

A. Alleviation of vitamin-A deficiency

B. Pest resistance

C. Herbicide tolerance

D. Producing a petrol-like fuel from rice

Answer: A

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

A. Bollworm

B. Roundworm

C. Moth

D. Fruit fly

Answer: A

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

A. Biofertilizers

B. Bio-metallurgical techniques

C. Bio-mineralization processes

D. Bioinsecticidal plants

Answer: D

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44. How is Bt toxin known to kill the target insects in protection of cotton plants?

A. Midgut cell lysis and swelling

B. Paralysis and loss of coordination

C. Formation otabnormal proteins

D. Brain death

Answer: A

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45. Which gene isolated from Bacillus thuringiensis has been known to control the insect population of corn borer?

A. HLA-gene

B. Cry I Ab-gene

C. Cry I Ac-gene

D. Cry II Ab-gene

Answer: B

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46. Which of the following statements about Bacillus thuringiensis are correct?

A. One of the toxin produced by the bacteria is thurioside, which is active against different groups of insect larvae.

B. The toxin accumulates inside the bacteria during sporulation.

C. Upone ingestion by susceptible insects they

are converted into active form and kill them by inhibition of ion transport in the midgut.

D. The proteins encoded by the gene Cry II Ab contrls com borer.

A. B only

B. A and B

C. A, B and C

D. A, B, C and D

Answer: C

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

A. Bacteria are resistantto the toxin

B. Toxin is immature

C. Toxin is inactive

D. Bacteria encloses toxin in a special sac

Answer: C

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48. Which of the following is used as a bioweapon ?

A. Bacillus subtilis

B. Bacillus licheniformis

C. Bacillus thuringiensis

D. Bacillus anthracis

Answer: D

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49. Which enzyme deficiency will lead to a disease called SCIO?

A. Adenosine deaminase

B. Alcohol dehydrogenase

C. Creatine kinase

D. Myosin ATPase

Answer: A

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50. ANDi is a transgenic

A. Plant

B. Goat

C. Monkey

D. Dog

Answer: C

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

A. NBPGR

B. GEAC

C. NSC

D. NIPGR

Answer: B

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52. A nematode Meloidogyne infects the roots of tobacco plants and causes a great redu.ction.....in yield. A novel strategy was ~dopted to prevent this infestation which was based on the process of

A. RNA interference

B. DNA interference

C. Protein inhibitor

D. Both (1) & (2)

Answer: A

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

A. Insulin is bitter in taste

B. Insulin is a peptide

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

D. Insulin leads to peptic ulcer if taken orally

Answer: B

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

A. Recombinant DNA technology

B. PCR

C. ELISA

A. A only

B. A & C only

C. A & B only

D. A,B,&C

Answer: D

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55. Choose the incorrect statement w.r.t. Ethical issues in biotechnology

A. Basmati rice is distinct for its unique. aroma and flavour and 27 documented varieties of Basmati are grown in India

B. In 1997, an American company got patent rights on Basmati rice through the US Patent and Trademark office

C. Biopiracy is the form used to refer to the use of bioresources by multinational companies without proper authorisation

from the countries and people concered without compensatory payment

D. The current interest in the manipulation of microbes, plants and animals has raised no ethical questions

Answer: D

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56. During gene cloning, which is called 'gerie taxi'?

A. Vaccine

B. Plasmid

C. Bacterium

D. Protozoa

Answer: B

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57. 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, 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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58. Bt brinijal an axample of transgenic crops.

In this Bt refers to

A. Bacillus tuberculosis

B. Bacillus thuringiensis

C. Biotechnology

D. β-Carotene

Answer: B

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Assignment Section D Assertion Reason Type Questions

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

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

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

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

of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: B

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

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

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

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

of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: C

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

R : Recombinant therapeutics induce unwanted immunological responses.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

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

of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: D

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

Reason :They could not replace the use of monkeys to test the safety of batches of the vaccine

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

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

of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: B

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

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

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

the assertion, then mark (1)

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A

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6. A: Dolly was the first mammal to be cloned from an udder cell.

R: To create, Dolly the finn dorset ewe, lan Wilmut and Keith Campbell used aid from three mothers.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: B

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7. A: Some nations are developing laws to prevent unauthorised exploiation of their bioresources and traditional knowledge.

R : Brazzein, a protein obtained from West African plant) was isolated, sequenced and patented. in U.S.A.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: B

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8. A: ELISA can enabfe very easydetectron of infection through antigen antibody interaction.

R : It is a nucleic acid based diagonostic tool that can confirm presence of infectious microbe at earfy stages.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: C

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9. A: Production of hirudin from transgenic Brassica required use of synthetic gene.

R : Eukaryotic genes have intron sequences that need to be spliced out.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A

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10. A : Biofortified crops such as golden rice are helpful in overcoming the problem of night blindness in developing nations.

R : It has enhanced nutritional content of vitamin A.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A