NEET REVISION SERIES

BIOTECHNOLOGY AND ITS APPLICATIONS

Revise Most Important Questions to Crack NEET 2020

Q-1 - 10761395

Which of the 'following is true for Golden rice' ?

(A) It has yellow grains, because of a gene introduced from a primitive variety of rice

(B) It is Vitamin A enriched, with a gene from daffodil

(C) It is pest resistant, with a gene from Bacillus thuringiensis

(D) It is drought tolerant, developed using Agrobacterium vector

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CORRECT ANSWER: B

SOLUTION:

Gene for β carotene is taken from daffodil plant and

inserted in normal rice plant to make golden rice

Q-2 - 26089157

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 from the deficiency of ADA.

SOLUTION:

The first clinical gene therapy was done for the treatment of SCID (Severe Combined) immuno Deficiency resulting from the deficiency of ADA.

The SCID patient has a defectiv e gene for the enzyme Adenosine Deaminase (ADA). Due to which he/she lacks functional T-lymphocytes and therefore fails to fight the infecting pathogen.

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Q-3 - 10761356

What triggers activation of protoxin to active toxin of Bacillus thuringiensis in boll worm

(A) Acidic pH of stomach

(B) Body temperature

(C) Moist surface of midgut

(D) Alkaline pH of gut

CORRECT ANSWER: D

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Q-4 - 18928062

Which of the flowing has the ability to transform normal cell into cancerous cell in animal

(A) Arbovirus

(B) Rotavirus

(C) Enterovirus

(D) Retrovirus

CORRECT ANSWER: C

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Q-5 - 40481518

In nematode resistance by RNA interference, some specific genes were introduced which form dsRNA. These were introduced in

(A) Nematode

(B) Host plant

(C) Agrobacterium

(D) All of these

CORRECT ANSWER: B

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Q-6 - 40481553

Find the odd one out:

(A) vaccines - immunology

(B) eco degradation - pesticides

(C) solar energy converter - pest control

(D) recombinant DNA - biotechnology

CORRECT ANSWER: C

Q-7 - 40481575

GEAC makes decisions regarding

(A) the validity of GM research

(B) the safety of introducing GM organisms for public services

(C) the validity of biopatents

(D) more than one options are correct

CORRECT ANSWER: D

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Q-8 - 40481584

Cry 1 endotoxins obtained from Bacillus Thuringiensis are effective against

(A) Flies

(B) Nematodes

(C) Boll worms

(D) Mosquitoes

CORRECT ANSWER: C

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Q-9 - 40481569

Gene therapy first used in the treatment of

(A) Albinism

(B) Haemohilia

(C) SCID

(D) LIQID

CORRECT ANSWER: C

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Q-10 - 40481543

Important objective of biotechnology in agriculture section is

(A) To prodce pest resistant varieties of plants

(B) To increase the nitrogen contant

(C) To decrease the seed number

(D) To increase the plant weight

CORRECT ANSWER: A

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Q-11 - 40481587

Main objective of production of herbicide resistant GM crops is to

(A) Eliminate weeds from the field without the use of herbicides

(B) Encourage eco-friendly herbicides

(C) Reduce herbicide accumulation in food articles for health safety

(D) Eliminate weeds from the field without the use of

manual labour

CORRECT ANSWER: D

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Q-12 - 40481573

Genetically engineered human insulin is called

(A) Humulin

(B) Haematin

(C) Hybridoma

(D) Hybrid

CORRECT ANSWER: A

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Q-13 - 40481577

Why has the Indian parliament cleared the second amendment of the country's patents bill?

(A) 1^{st}

(B) 2^{nd}

(C) 3^{rd}

(D) 4^{th}

CORRECT ANSWER: B

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Q-14 - 40481583

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

(A) Pseudomonas

(B) Trichoderma

(C) Xanthomonas

(D) Bacillus

CORRECT ANSWER: A

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Q-15 - 40481548

Modern biotechnology consist:

(A) Genetic engineering

(B) Tissue culture

(C) Microbiology

(D) All the above

CORRECT ANSWER: D

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Q-16 - 40481592

The bacterium Bacillus thuringiensis is widely used in contemporary biology as

(A) Source of industrial enzyme

(B) Indicator of water pollution

(C) Insecticide

(D) Agent for production of dairy products

CORRECT ANSWER: C

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Q-17 - 40481600

Genetic engineering has been successfully used for producing

(A) transgenic Cow-Roise which produces high fat milk for making ghee

(B) animals like bulls for farm work as they have super power

(C) transgenic mice for testing safety of polio vaccine before use in humans

(D) transgenic models for studying new treatments for certain cardiac diseases

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CORRECT ANSWER: C

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Q-18 - 40481585

Human insulin is being commercially produced from a transgenic species of

(A) Mycobacterium

(B) Rhizobium

(C) Saccharomyces

(D) Escherichia

CORRECT ANSWER: D

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Q-19 - 40481560

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

(A) Molecular farming

(B) Molecular genetics

(C) Molecular mapping

(D) Dry farming

CORRECT ANSWER: A

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Q-20 - 26089142

Bt cotton is not

(A) a GM plant

(B) insect resistant

(C) a bacterial gene expressing system

(D) resistant to all pesticides

SOLUTION:

Bt cotton is a genetically modified plant whose genes

have been altered by the manipulations to make it insect

resistant throght the introduction of BT of toxin gene. Bt toxin is produced by a bacterium called Bacillus thuringiensis (Bt). Bt toxin gene has been cioned from the bacteria which is expressed in plants to provide resistance to insects.

Some strains of Bacillus thuringlensis produce proteins that kills certain insects like lepidopterians (tobacco budworm, armyworm), coleopterans (bestides) and dipterans (files, mosquitoes)

Bt cotton is made resistant to certain taxa of pests only (as mentioned above) it is quite likely that in future. some other pests may infest these Br cotton plants.

Q-21 - 40481516

Genetic modification (GM) has been used to

(A) Create tailor made plants

(B) Supply alternative resources to industries

(C) Enhanced nutritional value of food

(D) All of the above

CORRECT ANSWER: D

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Q-22 - 40481567

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

(A) Toxicity

(B) Allergic reaction

(C) Antibiotic resistance in microorganism present in alimentary canal

(D) All the above

CORRECT ANSWER: D

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Q-23 - 40481595

Which one of the following is used as vector for cloning genes into higher organisms ?

(A) Rhizopus nigricans

(B) Retrovirus

(C) Baculovirus

(D) Salmonella typhimurium

CORRECT ANSWER: B

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Q-24 - 40481601

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

(A) Enhancing mineral content

(B) Drought-resistance

(C) Insect-resistance

(D) Enchancing shelf life

CORRECT ANSWER: C

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Q-25 - 40481551

First artificial synthesysed hormone is:

(A) Secretin

(B) Insulin

(C) Glucagen

(D) Renin

CORRECT ANSWER: B

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Q-26 - 40481606

Agarose extracted from sea weeds finds use in

(A) Spectrophotometry

(B) Tissue culture

(C) PCR

(D) Gel electrophoresis

CORRECT ANSWER: D

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Q-27 - 40481611

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

(A) Bacterial blights

(B) Bollworms

(C) Nematodes

(D) White rusts

CORRECT ANSWER: C

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Q-28 - 40481614

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

(A) Hybridization

(B) Recombinant DNA techniques

(C) X-ray diffraction

(D) Heavier isotope labelling

CORRECT ANSWER: B

Q-29 - 40481564

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 batter tensile strength

(C) Produced by "biotechnology" using restriction enzymes and ligases

(D) Carrying an endotoxin gene from Bacillus thuringiensis

CORRECT ANSWER: D

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Q-30 - 26089149

The site of production of ADA in the body is

(A) erythrocytes

(B) lymphocytes

(C) blood plasma

(D) ostecoytes

SOLUTION:

ADA gene is responsible for producing the enzyme adenosine deaminase. Which is primarily involved in the develpoed and maintenance of immune system.

It is produced in all cells, but the highest level of adenosine deaminase occurs in the cells of immune system called lymphocytes. which develop in lymphoid tissues. ADA converts deoxyadnosine (toxic to lymphocytas) to deoxyniosine (non-toxic form).

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Q-31 - 18928061

Which of these is used as vector in gene therapy for SCID

(A) Arbovirus

(B) Rotavirus

(C) Enterovirus

(D) Paravovirus

CORRECT ANSWER: C

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Q-32 - 40481519

Select the incorrect match

(A) Transgenic mice-Polio vaccine

(B) Rosie cow-α lactalbumin gene

(C) ssDNA/RNA probe- Gene therapy

(D) PCR - Molecular diagnosis

CORRECT ANSWER: C

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Q-33 - 40481598

An improved variety of transgenic basmati rice

(A) is completely resistant to all insect pests and diseases of paddy

(B) gives high yield but has no charactristic aroma

(C) does not require chemical fertilizers and growth hormones

(D) give high yield and is rich in vitamin A

CORRECT ANSWER: D

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Q-34 - 40481609

Continous addition of sugars in 'fed batch' fermentation is done to

(A) Produce methane

(B) Obtain antibiotics

(C) Purify enzymes

(D) Degrade sewage

CORRECT ANSWER: B

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Q-35 - 40481546

The prerequisties for biotechnological production of antibiotics is

(A) To search an antibiotic producing miecroorganism

(B) To isolate the antibiotic gene

(C) To join antibiotic gene with E.coli plasmid

(D) All of the above

CORRECT ANSWER: D

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Q-36 - 40481612

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

(A) does not kill carrier bacterium which is itself resistance to this toxin

(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

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CORRECT ANSWER: B

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Q-37 - 40481616

For transformation, micro-particles coated with DNA to be bombarded from gene gun are made up of

(A) Silicon or Platinum

(B) Gold or Tungsten

(C) Silver or platinum

(D) Platinum or zinc

CORRECT ANSWER: B

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Q-38 - 40481608

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

(A) Nematodes

(B) Fungi

(C) Viruses

(D) Insects

CORRECT ANSWER: A

Q-39 - 40481565

The bacteria Pseudomonas is useful because of its ability to:

(A) Transger gene from one plant to another

(B) Decompose a variety of organic compounds

(C) Fix atmospheric nitrogen in the soil

(D) Produce a wide variety of antibiotics

CORRECT ANSWER: B

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Q-40 - 26089144

GEAC stands for

(A) Genome En gineering Action Committee

(B) Ground Environment Action committee

(C) Genetic En gineering Approval Committee

(D) Genetic and Enviroment Approval Committee.

SOLUTION:

GEAC stands for Genetic Engineering Approval

Committee. The indian government has set up this organisation to make decisions regarding the validity of GM research and the safety of introducing GM-organisms for public services.

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Q-41 - 40481489

Which of the follwing is used as a best genetic vector in plants

(A) Bacillus thuriengenesis

(B) Agrobacterium tumefaciens

(C) Pseudomonas putida

(D) All of these

CORRECT ANSWER: B

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Q-42 - 40481572

Bt-cotton is resistant for

(A) Round-worm

(B) Fluke-worm

(C) Boll-worm

(D) Pin-worm

CORRECT ANSWER: C

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Q-43 - 40481591

Transgenic plants are the ones:

(A) Grow in artifical medium after hybridization in the field

(B) Produced by a somatic embryo in artifical medium

(C) Generated by introducing foregin DNA in to a cell and regenerating a plant from the cell

(D) Produced after protoplast fusion in artificial medium

CORRECT ANSWER: C

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Q-44 - 40481561

First transgenic plant:

(A) Potato

(B) Tomato

(C) Tobacco

(D) Maize

CORRECT ANSWER: C

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Q-45 - 40481578

Which of the following peptide chain in not present in mature insulin

(A) A-peptide

(B) B-peptide

(C) C-peptide

(D) A & B peptide

CORRECT ANSWER: C

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Q-46 - 40481520

Which of the following step is not involved in basic steps in genetically modifying an organism

(A) Identification of DNA with desirable gene

(B) Introduction of the identified DNA into the host

(C) Amplification of DNA by using PCR

(D) Maintenance of introduced DNA in the host and transfer of the DNA to its progeny

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CORRECT ANSWER: C

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Q-47 - 40481571

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

(A) Bioinsecticidal plants

(B) Bio-mineralization processes

(C) Biofertilizers

(D) Bio-metallurgical techniques

CORRECT ANSWER: A

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Q-48 - 40481582

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 from rice

CORRECT ANSWER: A

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Q-49 - 40481562

E. coli are used in production of:

(A) Rifampicin

(B) LH

(C) Ecodyson

(D) Interferon

CORRECT ANSWER: D

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Q-50 - 40481552

Transgenic animal has

(A) Foregin DNA is all its cells

(B) Foreign RNA is all its cells

(C) Foreign DNA is some of the cells

(D) Both 2 and 3

CORRECT ANSWER: A

Q-51 - 40481557

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

CORRECT ANSWER: A

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Q-52 - 40481495

What is the source of the Ti (Tumor inducing) plasmid which is modified and used as a cloning vecotr to deliver the desirable genes into plant cells?

(A) Agrobacterium tumifaciens

(B) Thermophilus aquaticus

(C) Pyrococcus furiosus

(D) Aedes aegypti

CORRECT ANSWER: A

Q-53 - 26089156

In RNAi, genes are silenced using

(A) ss DNA

(B) ds DNA

(C) ds RNA

(D) ss RNA

SOLUTION:

A nematode Meiodegyne incognitia infects the roots of tobaccoo plants which reduces the production of tobaccoo. It can be prevented by using RNA interference process, which is checked by silencing of specific mRNA due to a complementary dsRNA. dsRNA binds and

prevents the translation of mRNA (silencing).

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Q-54 - 18928078

First biochemical to be produced comercially by microbial cloning and genetic engineering is

(A) Humann insulin

(B) Penicillin

(C) Interferons

(D) Fertility factors

CORRECT ANSWER: A

SOLUTION:

Comercially production of E.coli genetically engineered

human insulin

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Q-55 - 40481504

The microinjection of desired gene from other organism into fertilized eggs of animals results in?

(A) monstrosities

(B) free Martins

(C) transgenic animals

(D) twins

CORRECT ANSWER: C

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Q-56 - 40481559

A genetically engineered bacteria used for clearing oil spills is:

(A) escherischia coli

(B) Bacillus subtilis

(C) Agrobacterium tumifaciens

(D) Pseudomonas putida

CORRECT ANSWER: D

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Q-57 - 40481576

The use of bio-resources by multinational companies & other organisations without proper authorisation from the countries & people concerned, is known as-

(A) Biopatent

(B) Biopiracy

(C) Biowar

(D) Biodiversity

CORRECT ANSWER: B

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Q-58 - 40481588

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

(A) Starlink maize

(B) Bt Soybean

(C) Golden rice

(D) Flavr Savr tomatoes

CORRECT ANSWER: C

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Q-59 - 40481566

Cry-gene which synthesize crystal protein isolated from:

(A) Bacillus thuriengenesis

(B) Rhizobium

(C) Bacillus polymyxa

(D) Clostridium

CORRECT ANSWER: A

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Q-60 - 18928093

What is the permanent cure of adenosine deaminase (ADA)

deficiency in children ?

(A) Hybridoma technology

(B) Gene therapy

(C) rDNA technology

(D) Embryo transfer

CORRECT ANSWER: B

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Q-61 - 40481556

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

(A) Bolloworm

(B) Roundworm

(C) Moth

(D) Fruit fly

CORRECT ANSWER: A

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Q-62 - 40481589

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

(A) Penicillium expansum

(B) Trichoderma harzianum

(C) Medoidogyme incognita

(D) Agrobacterium tumefaciens

CORRECT ANSWER: D

Q-63 - 40481594

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

(A) Enzyme replacement therapy

(B) Periodic infusion of genetically engineered lymphocytes having functional ADA cDNA

(C) Administering adenosine deaminase activators

(D) Introducing bone marrow cells producing ADA into cells at early embryonic stage

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CORRECT ANSWER: D

Q-64 - 40481607

Maximum number of existing transgenic animals is of:

(A) Fish

(B) Mice

(C) Cow

(D) Pig

CORRECT ANSWER: B

Q-65 - 40481545

The number of drug used in cancer treatment produced by biotechnology is

(A) Interferon

(B) [HGH] Human growth hormone

(C) TSH

(D) Insulin

CORRECT ANSWER: A

Q-66 - 40481593

What is true about Bt toxin ?

(A) The concerned Bacillus has antitoxins

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

(C) Bt protein exists as active toxin in the Bacillus

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

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CORRECT ANSWER: B

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Q-67 - 40481574

The C-peptide is

(A) not present in proinsulin

(B) present in mature insulin

(C) removed during maturation of insulin

(D) also present in artificial insulin

CORRECT ANSWER: C

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Q-68 - 26089155

Golden rice is

(A) a variety of rice grown along the yellow river in china

(B) long stored rice having yellow colour ting

(C) a transgenic rice having gene for β-carotene

(D) wild variety of rice with yellow coloured grains.

SOLUTION:

Golden rice is a genetically modified crop with enhanced nutritional value. It is rich in vitamin-A $\beta -$ caratene and was developed at Swiss Federal institute of Technology If consists $b\eta$ carotene gene from daffodii plant and also genes from some bacteria. Golden rice prevents child blindness which is caused due to the deficiency of

vitamin-A.

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Q-69 - 40481517

The choice of Bt-gene for experiment depends upon

(A) The host plant/crop

(B) Targeted pest/insect

(C) Bacillus strain

(D) 1 & 2 both

CORRECT ANSWER: D

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Q-70 - 40481602

Some of the characteristics of Bt-cotton are :

(A) High yield and production of toxic protein crystals which kill dipteran pests

(B) High yield and resistance to bollworms

(C) Long fibre and resistance to aphids

(D) Medium yield, long fibre and resistance to beetle pests

CORRECT ANSWER: B

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Q-71 - 40481610

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) Statements (A) and (B)

(B) Statements(B) and (C)

(C) Statements (C) and (D)

(D) Statements (A) and (C)

CORRECT ANSWER: A

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Q-72 - 40481570

DNA probe is used for

(A) DNA finger printing

(B) Detection of pathogenic bacteria

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

(D) All the above

CORRECT ANSWER: D

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Q-73 - 40481558

During the processing of the prohormone "proinsulin" into the mature "insulin"

(A) C-peptide is added to proinsulin

(B) C-peptide is removed from proinsulin

(C) B-peptide is added to proinsulin

(D) B-peptide is removed from proinsulin

CORRECT ANSWER: B

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Q-74 - 40481590

Polyethylene glycol method is used for

(A) Energy production from sewage

(B) Gene transger without a vector

(C) Biodiesel production

(D) Seedless fruit production

CORRECT ANSWER: B

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Q-75 - 40481579

Two microbes found to be very useful in genetic engineering are

(A) Escherichia coli and Agrobacterium tumefaciens

(B) Vibrio cholerae and a tailed bacteriophage

(C) Diplococcus sp. and Pseudomonas sp.

(D) Crown gall bacterium and Caenorhabditis elegans

CORRECT ANSWER: A

Q-76 - 40481563

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

(A) Gene mutation

(B) Gene synthesis

(C) Gene manipulation

(D) Gene replication

CORRECT ANSWER: C

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Q-77 - 40481503

Transgenic plants are developed by

(A) Inducing gene mutation

(B) Arresting spindle fibre formation

(C) Deleting sex chromozomes

(D) Indroducing foreign genes

CORRECT ANSWER: D

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Q-78 - 18928075

Which of these is widely used in genetic engineering

(A) Anopheles

(B) Dragon fly

(C) Dragon lizard

(D) Fruit fly

CORRECT ANSWER: D

SOLUTION:

Fruit fly also known as drosophilia is widely used cloning vectors, it contains both ampicillin and tetracycline resistance genes.

Main objective of production of herbicide resistant GM crops is to

(A) Encourage eco-friendly herbicides

(B) Reduce herbicide accumulation in food articles for healthy safty

(C) eliminate weeds from the field without the use of manual labour

(D) Eliminate weeds from the field without the use of herbicides

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CORRECT ANSWER: B

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Q-80 - 26089154

The trigger for activation of toxin of Bacillus thuringiensis is

(A) acidic pH of stomach

(B) high temperature

(C) alkaline pH of gut

(D) mechanical action in the insect gut

SOLUTION:

Bt toxins are initially inactive protoxins but after ingestion b y the insect the these inactive toxin becomes active due to the alkaline pH of the gut which solublise the crystais .

Hence, high pH value is required to make Bt toxins active. Under high temperature and acidic pH, Bt toxins insoluble and inactive.