

### **BIOLOGY**

# BOOKS - CHETAN BIOLOGY (TAMIL ENGLISH)

## **CELL BIOLOGY AND BIOTECHNOLOGY**

Fill In The Blanks And Rewrite The Completed Statements

**1.** Cells of the embryo undergo repeated ......division .



**View Text Solution** 

**2.** All the cells except sperm and ova in the body are called as ......cells.



**3.** Alcohol is produced from sugar molasses with the help of ......yeast



**View Text Solution** 

**4.** The ......bacteria are useful of cleaning the hydrocarbon and oil pollutants from soil and water.



**5.** We have great tradition of .....that cures the diseases with the help of natural sources.



## **View Text Solution**

**6.** Government of india has encouraged the ......for improving the productivity by launching NKM-16.



**7.** .....is the revolutionary event in biotechnology after cloning .



**View Text Solution** 

**8.** Methods like artificial insemination and embryo transplant are mainly used for ......



**9.** The disease related with the synthesis of insulin is ......



**View Text Solution** 

**10.** .....play an impotant role in wound healing.



**11.** The mass of cells at the earliest stage of development are called ......



## **View Text Solution**

**12.** Stem cells are present in the .....by which the foetus is joined to the uterus of the mother.



13. Stem cells are present in ......and ......of adult human being.



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**14.** Stem cell vials are stored in ....... at -  $135^{\circ}C$  to  $-190^{\circ}C$ .



**15.** The property of self - multiplying of stem cells is called as ......



## **View Text Solution**

**16.** Bringing about artifical genetic changes and hybridization in organisms of human welfare is called ......



**17.** Crops developed with desired characters by integrating froeign gene with their genome are called as .......crops



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**Watch Video Solution** 

**19.** A gene synthesizing .....has been introduced in golden rice.



**Watch Video Solution** 

**20.** Potatoes which can be used as edible vaccines are called.....



21. .....is used in the treatment of viral diseases.



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**22.** .....arises due to genetic changes in hepatocytes (liver cells).



**23.** Production of replica of any cell or organ or entire organism is called ......



## **View Text Solution**

**24.** The ferm ......can absorb arsenic from the soil.



**25.** The bacterium .....is highly radiation resistant organism.



**View Text Solution** 

**26.** Grasses like alfalfa, clover and rye are used for .....



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**27.** .....discovered microbes for cleaning the oil spills.



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#### Find The Odd Word Out

**1.** Cord blood, red bone marrow, epithalial tissue, adipose connective tissue.



**2.** Liver , heart, eyes, kidney



**3.** Cytology, molecular biology, genetic engineering, cosmology.



4. Rhizobium, azotobacter, nostoc, lactobacilli.



5. Alfalfa, rye, clover, bamboo



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**6.** Somatostatin, erthyropoietin, interleukin, phenylketonuria.



**View Text Solution** 

7. DDT, malathion, chloropyriphos, NPK

## Considering The Relationship In The First Pair Complete The Second Pair And Rewrite

1. National centre for science : : Pune : Instem :

• .....



2. Green revolution: Dr. M. S. swaminathan and

Dr. normn borlaug:: White revolution ..............

3. National pomegranate research institute :

Solapur : : National citrus research institute :



4. White revolution: Dairy:: Blue revolution:

.....



5. Insulin: Diabetes:: Interleukin: ......



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**6.** Interferon: .....:: :: Erythropoietin:

Anemina.



7. ..... : Dwarfness : : Factor VIII :

Hemophilia



8. Crop resistant to bollworm : : Crop ......

Synthesizing large quantities of vitamin A:

Golden rice.



**9.** Osteocytes : Bone cells : : Hepatocytes



**View Text Solution** 

10. Adhatoda vasica : ..... :: melia

azadiracta: Neem



**View Text Solution** 

Match The Columns

Column 'A'	Column 'B'
(1) National centre for cell science	(a) Delhi
(2) Instem	(b) Pune
(3) Centre for DNA fingerprinting and diagnostics.	(c) Bengaluru
(4) Indian Agricultural Research Institute	(d) Hyderabad

	Column 'A'	Column 'B'
	(1) Bt Brinjal	(a) Azotobacter
	(2) Weeds	(b) Bacillus thuringiensis
	(3) Golden Rice	(c) Herbicides
	(4) Biofertilizer	(d) Vitamin A
2.		(e) Hybrid seeds

Column 'A'		Column 'B'
(1) Dr. Anand Mohan Chakravarti	(a)	Green revolutionn
(2) Dr. M. S. Swaminathan and Dr. Norman Borlaug	(b)	White revolution
(3) Dr. Verghese Kurien	(c)	Blue revolution
	(d)	Cleaning of oil spillage



	Column 'A'		Column 'B'
(1)	Interferon	(a)	Diabetes
(2)	Factor VIII	(b)	Dwarfness
(3)	Somatostatin	(c)	Viral Infection
(4)	Interleukin	(d)	Cancer
		(e)	Hemophilia



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	Column 'A'		Column 'B'
(1)	Erythropoietin	(a)	Viral infection
(2)	Interferon	(b)	Dwarfism
(3)	Insulin	(c)	Anaemia
<b>(4)</b>	Somatostatin	(d)	Diabetes



5.

#### **True Or False Correct The False Statement**

**1.** Cell biology includes the study of cell division



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**2.** Stem cells do not play an important role in wound healing



**3.** Research institutes specially dedicated for research on cells are established at solarpur and nagpur



**View Text Solution** 

**4.** Stem cells are present in the umbilical corb be which the foetus is joined to the uterus of the mother.



**5.** 320 different types of cells in human body are formed from single type of cells.



**View Text Solution** 

**6.** Stem cells are parent cells of all types of human cells



**7.** Skin from all parts of the body can be donated.



**View Text Solution** 

**8.** There is conderable progress mainly in the field of agriculture and pharmacy due to biotechnology.



**9.** Genetic biotechnology involves use of either cell or tissue.



**View Text Solution** 

**10.** Genetically modified golden rice variety contains 50 times more amount of Beta carotene.



**11.** Vaccines produced with the help of biotechnology are thermo - stable .



## **View Text Solution**

**12.** Transgenic . E.coli are used for production of interferon .



**13.** Phenylketonuria arises due to genetic changes in osteocytes.



## **View Text Solution**

**14.** There is world - wide support to human clothing on various tissues.



**15.** Grasses like alfalfa, clover and rye are used in phytoremediation .



## **View Text Solution**

**16.** DNA sequence of each person is unique as that of the fingerprints.



**17.** 30% to 60% subsidies are offered by government for pisciculture.



## **View Text Solution**

**18.** Chemical fertilizers increases the fertility of soil.



**19.** Changes in genes of the cells are brought about in non-genetic technique



## **View Text Solution**

**20.** Gene from Bacillus thuringiensis is introduced into soyabean.



**21.** The bacteria pseudomonas is highy radiation resistant organism.



**22.** Cell differentiation starts from 5th - 7th day of conception.



**23.** Embryonic cells after differentiation are called as embryonic stem cells .



**View Text Solution** 

**24.** Process of excretion can occur with the help of single kidney.



**View Text Solution** 

**25.** A clone can be produced by fusion of an nucleus of ovum with the enculeated somatic cell.



**View Text Solution** 

**26.** Genes can also be cloned and milions of copies of same gene can be produced.



**View Text Solution** 

**27.** Genetically modified variety of cotton can absorb selenium from the soil.



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**28.** Dr. verghese kurien has a valuable contribution in green revolution.



**View Text Solution** 

Name The Following

**1.** Special cells present in the body of multicellular organisms.



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2. Types of stem cells



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3. Sources of adult stem cells



**View Text Solution** 

4. Source of stem cell immediately after birth



**View Text Solution** 

**5.** Organs which can be donated only after death



**6.** Branches of science included in biotechnology



**View Text Solution** 

7. Genetically modified crops



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8. Plant used as biofertilizer



9. Edible vaccines



**View Text Solution** 

10. Protein used in treatment of viral disease



**Watch Video Solution** 

11. Genetic disorder in somatic cell



**12.** New concepts in biotechnology



**View Text Solution** 

13. Bactria used as biofertilizer



**Watch Video Solution** 

14. Bacterium which is radiation resistant



**15.** Discovery of cleaning of oil - spillage of microbes in oceans



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16. Contricutors of green revolution



**View Text Solution** 

17. Pioneer of white revolution



18. Government pisciculture program



19. Soil less farming



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20. Pesticides



21. Plant used in phyto-remediation



22. Disease in which cell therapy is used.



23. Protein used in treatment of viral disease



24. Research institutes in india.



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## Answer The Following In One Sentence

1. What is a cell?



2. What is tissue?



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**3.** Which technique in relation to tissue have you studies in earlier classes ?



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**4.** Just like the grafting in plants, is the organ transplantation possible in human?

**5.** What is biotechnology?



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## **Choose And Write The Correct Option**

A.  $-135^{\circ}C$  to  $-190^{\circ}C$ 

B. 
$$-125^{\circ}C$$
 to  $-150^{\circ}C$ 

C. 
$$135^{\circ}C$$
 to  $190^{\circ}C$ 

D. 
$$133^{\circ} C$$
 to  $187^{\circ} C$ 

#### **Answer: A**



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2. Indian agricuture research institute is at

A. Solapur

- B. Bengalaru
- C. Delhi
- D. Pune

#### **Answer: C**



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**3.** In nil-kranti mission - 2016 program , government is offering subsidies of ...........

**A.** 15%-20%

C. 75%-77%

D. 35%-50%

#### **Answer: B**



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4. Adulsa is taken is cure .....

A. Cough

B. Fever

- C. Dysentery
- D. Vomiting

**Answer: A** 



- **5.** Pesticides are infact a type of ..............
  - A. Fertilizer
  - B. Poision
  - C. Manners

D. Organic product

**Answer: B** 



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**6.** In soil - less farming i.e. hydroponics chemical fertilizer are used

A. Solid

B. liquid

C. Gaseous

D. Plasma

#### **Answer: B**



## **View Text Solution**

A. Solapur

B. Pune

C. Nagpur

D. New delhi

**Answer: A** 



**View Text Solution** 

**8.** DNA fingerprinting is mainly useful in .....science.

A. Formal science

B. Natural science

C. Social science

D. Forensic science

#### **Answer: D**



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**9.** Interferon is a group of small sized protein disease .

A. Cancer

B. Diabetes

C. Anemia

D. Viral

#### **Answer: D**



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**10.** Cattle feeding on transgenic ...... does not contract a viral disease - rinderpest .

- A. Potato
- B. Onion
- C. Tobacco

D. Tomato

#### **Answer: D**



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A. Horse

B. Cat

C. Bacteria

D. Virus

#### **Answer: C**



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12. Stem cells are present in ...............................

A. Umbilical cord

B. Bone marrow

C. Adipose connective tissue

D. All of the above

#### **Answer: D**



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**13.** A clone is produced by fusion of nucleus of somatic cell with an enucleated

- A. Sperm
- B. Ovum
- C. Stem cell
- D. Hepatocyte

#### **Answer: B**



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## Define

1. Cytology/Cell biology



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2. Stem cells



3. Pleuripotency



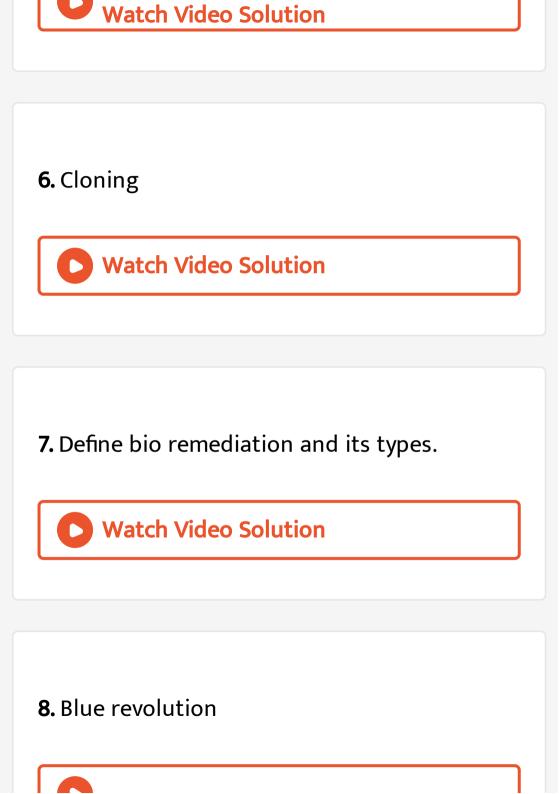
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4. Genetically modified crops



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5. Vaccines





9. Cell therapy



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10. Biotechnology



**Watch Video Solution** 

**Short Notes** 

# 1. Stem cells



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2. Organ transplantation



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3. Organ and body donation



**4.** Biotechnology : Professional uses.



5. Benefit of biotechnology



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**6.** Genetically modified crops



**7.** Biofertilizers.



**Watch Video Solution** 

8. Edible vaccines



**Watch Video Solution** 

9. Green revolution: Dr. M. S. swaminathan and

Dr. normn borlaug:: White revolution ..............



#### **10.** White revolution



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#### 11. Blue revolution



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12. Organic farming



13. Importance of medicinal plants.



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## **Distinguish Between**

1. Stem cells and cells



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Answer The Following

1. State the uses of stem cells

Regenerative therapy



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2. State the uses of stem cells

Organ transplantation



**3.** In which various fields the biotechnology has been useful?



**4.** What is gene therapy?



5. What is DNA finger printing?



**6.** How are stem cells preseved?



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7. What are the functions of tissues?



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**8.** Which are the various processes in tissue culture?

**9.** Which new species of the rice have been developed in india?



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**10.** Which products produced through biotechnology do you use in your daily life?



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**11.** Why some of the organs in human body are most valuable ?



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**12.** Explain the importance of fruit processing in human life .



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**13.** Define vaccination



**Watch Video Solution** 

**14.** What is the impact of biotechnology on agriculture and other related fields?



15. Why are articficial been boxes used for apiculture?



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16. Explain the extraction of insulin.



**17.** Give 5 examples of each of the fruiting and flowering plants developed through tissue culture and mention their benefits .



**18.** Which fruits processing industries you observe in your surrounding? What is their

effect?



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**Give Scientific Reason** 

1. Give scientific reasons:

Herbicides tolerant plant varieties of crops are being developed .



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2. Give scientific reasons:

DNA fingerprinting is useful in forensic sciences and paternity testing.



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## **Answer The Following Questions**

**1.** Mohan is suffering from cirrhosis of liver. His chances of survival is only 20%. Doctor are

advising transplant of the liver.

What are the 2 possible of saving mohan's life.



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**2.** Mohan is suffering from cirrhosis of liver. His chances of survival is only 20%. Doctor are advising transplant of the liver.

What factor should be considered before transplant of the liver by mohan and the donar.



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**3.** 2.5 years old yagnesh has met with an accident. He has lost his life. His parents want to donate his organs?

which organs can be donated after death.



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**4.** 2.5 years old yagnesh has met with an accident. He has lost his life. His parents want to donate his organs?

Which concept has conviced yagnesh parents for donating his organs?



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**5.** Amol has renal failure. His nephrologist has advised him renal transplant.

Can his mother donate him one kidney?



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**6.** Amol has renal failure. His nephrologist has advised him renal transplant.

What factors should be checked before transplant by the doctor for amol's mother and amol.



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**Label The Diagram And Answer The Questions** 

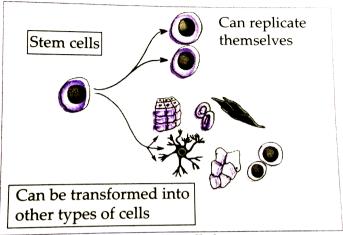


Fig. 8.1. Stem cell therapy

### Label the diagram and give a heading



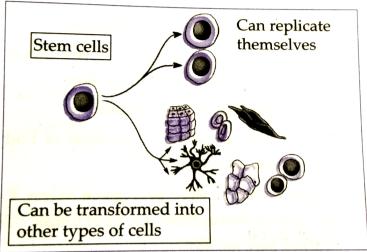


Fig. 8.1. Stem cell therapy

which types of cells are shown in the diagrams?



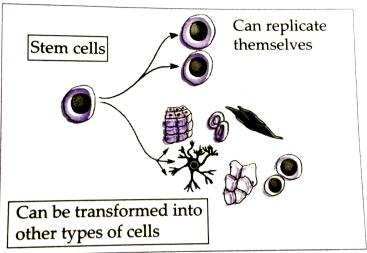


Fig. 8.1. Stem cell therapy

Define the type of cells.



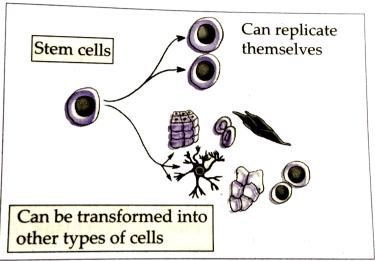


Fig. 8.1. Stem cell therapy

which cells can be formed due to the cell mentioned in the diagram?



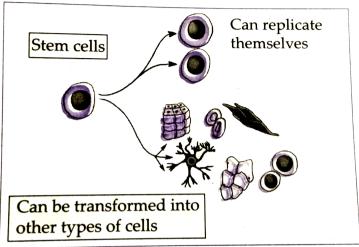


Fig. 8.1. Stem cell therapy

State any one use of these cells with respect to the disease cured by it.



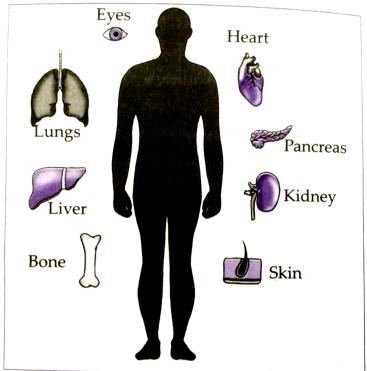


Fig. 8.2. Organs that can be donated

Label the organs in the diagram and name the diagram/ caption.





Fig. 8.2. Organs that can be donated

List the organs that can be donated.



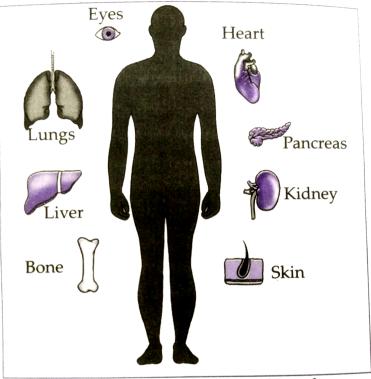


Fig. 8.2. Organs that can be donated

What is posthumous donation?



**9.** Assign names in the figure given below, explain the various stages those are kept blank.

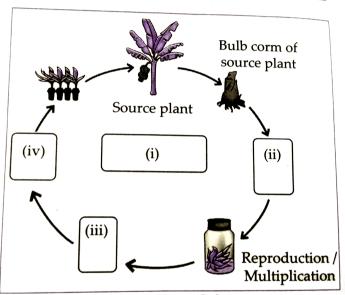
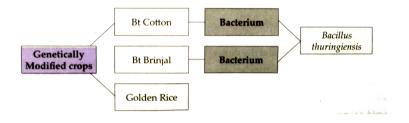


Fig. 8.3 Tissue Culture



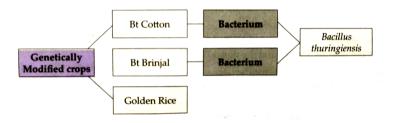
**10.** Based on the genetically modified crops fill in the blanks and ansewer the question based on it .



What is produced in the leaves of cotton plant



**11.** Based on the genetically modified crops fill in the blanks and ansewer the question based on it .

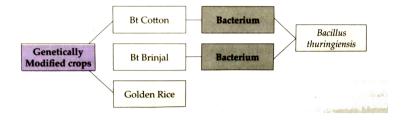


How does the bollworm die?



**12.** Based on the genetically modified crops fill in the blanks and ansewer the question based

on it.



Which types of gene is introduced in golden rice?



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## **Complete Chart**

1. Complete the following chart



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**2.** Complete the following chart



View Text Solution

**3.** Complete the following chart



**View Text Solution** 

4. Complete the following chart



View Text Solution

# **Complete The Chart**

1. Complete the following chart



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# Paragraph Type Question

**1.** Explain the formation of transgenic potatoes with the help of diagram .

**2.** Work on production of edible vaccines is in progress and presently, potatoes are being produced with the help of biotechnology. These potatoes are called as transgenic potatoes. These potatoes will act against bacteria like vibro cholerae, escherichia coli. consumption of these raw potatoes generates the immunity against cholera and the disease caused due to E. coli.

Edible vaccines are taken in which form of food?



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**3.** Work on production of edible vaccines is in progress and presently, potatoes are being produced with the help of biotechnology. These potatoes are called as transgenic potatoes. These potatoes will act against bacteria like vibro cholerae, escherichia coli. consumption of these raw potatoes generates the immunity against cholera and the disease caused due to E. coli.

What is the other name of this food?



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4. Work on production of edible vaccines is in progress and presently, potatoes are being produced with the help of biotechnology. These potatoes are called as transgenic potatoes. These potatoes will act against bacteria like vibro cholerae, escherichia coli.

consumption of these raw potatoes generates the immunity against cholera and the disease caused due to E. coli.

List the bacteria against which these food will



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5. Work on production of edible vaccines is in progress and presently, potatoes are being produced with the help of biotechnology. These potatoes are called as transgenic potatoes. These potatoes will act against

bacteria like vibro cholerae, escherichia coli.
consumption of these raw potatoes generates
the immunity against cholera and the disease
caused due to E. coli.

Against which disease immunity is generated?



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**6.** DNA sequence of each person is unique as that of the fingerprints Due to this, identity of any person can be established with the help of its available DNA. This is called DNA

fingerprinting. It is mainly useful in forensic science. Identify of the criminal an be established with the help of any part of its body found at the side of crime. Similarly, identity of father of any child can be established . This research is performed in Centre for DNA fingerpriting and Diagnostics, Hyderabad.

What is DNA fingerprinting?



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**7.** DNA sequence of each person is unique as that of the fingerprints Due to this, identity of any person can be established with the help of its available DNA. This is called DNA fingerprinting. It is mainly useful in forensic science . Identify of the criminal an be established with the help of any part of its body found at the side of crime. Similarly, identity of father of any child can be established . This research is performed in Centre for DNA fingerpriting and Diagnostics, Hyderabad.

DNA fingerprinting is mainly used in which stream of science?



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**8.** DNA sequence of each person is unique as that of the fingerprints Due to this, identity of any person can be established with the help of its available DNA. This is called DNA fingerprinting. It is mainly useful in forensic science. Identify of the criminal an be established with the help of any part of its

body found at the side of crime. Similarly, identity of father of any child can be established. This research is performed in Centre for DNA fingerpriting and Diagnostics, Hyderabad.

What is the use of DNA fingerprinting?



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**9.** DNA sequence of each person is unique as that of the fingerprints Due to this, identity of any person can be established with the help of

its available DNA. This is called DNA fingerprinting. It is mainly useful in forensic science . Identify of the criminal an be established with the help of any part of its body found at the side of crime. Similarly, identity of father of any child can be established . This research is performed in Centre for DNA fingerpriting and Diagnostics, Hyderabad.

Where is DNA fingerprinting research performed?



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10. A sheep 'Dolly' was born in Scotland by cloning techinque on 5th July 1996. Nucleus from the udder cell of sheep of 'Finn Dorset' variety had been introduced into enucleated ovum of Scottish sheep. Then, the ovum was allowed to develop in the uterus of Scottish sheep and thereby 'Dolly' had been born. It was showing the charcters as per the chromosomes in nucleus and any character of Scottish sheep was not visible.

In which year was the first cloning technique

done?

11. A sheep 'Dolly' was born in Scotland by cloning techinque on 5th July 1996. Nucleus from the udder cell of sheep of 'Finn Dorset' variety had been introduced into enucleated ovum of Scottish sheep. Then , the ovum was allowed to develop in the uterus of Scottish sheep and thereby 'Dolly' had been born. It was showing the charcters as per the chromosomes in nucleus and any character of Scottish sheep was not visible.

Name the varieties of sheep breed used to form the clone.



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**12.** A sheep 'Dolly' was born in Scotland by cloning techinque on 5th July 1996. Nucleus from the udder cell of sheep of 'Finn Dorset' variety had been introduced into enucleated ovum of Scottish sheep. Then , the ovum was allowed to develop in the uterus of Scottish sheep and thereby 'Dolly' had been born. It

was showing the charcters as per the chromosomes in nucleus and any character of Scottish sheep was not visible.

Explain the meaning of the word enucleated ovum.



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**13.** A sheep 'Dolly' was born in Scotland by cloning techinque on 5th July 1996. Nucleus from the udder cell of sheep of 'Finn Dorset' variety had been introduced into enucleated

allowed to develop in the uterus of Scottish sheep and thereby 'Dolly' had been born. It was showing the charcters as per the chromosomes in nucleus and any character of Scottish sheep was not visible.

(d) Whose character dolly was showing and why?



Answer The Following In Detail

**1.** Which precautions you will take during spraying of pesticide?



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**2.** Write a comparative note on usefulness of biotechnology



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**3.** Write a comparative note on harmfulness of biotechnology



**4.** What is biotechnology? What are its commercial application?



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## Assignment

1. Fill in the blanks

The disease related with synthesis of insulin is

••••••••••••



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2. Find the odd one out

Red bone marrow, adipose connective tissue, blood, neurons.



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**3.** Complete the analogy:

Interferon: .....:: Erythropoietin: Anemia.

4. Choose and write the correct option:

From the following processes find the odd one out ...........

A. Biopesticide

B. Biofertilizers

C. Biosensors

D. Biology

Answer:

5. Choose and write the correct option:

Phenylketonuria arises due to genetic changes

in ...........

A. Neurons

B. Hepatocytes

C. Osteocytes

D. Blood corpuscles.

**Answer:** 



6. Write short note on: Biofertilizers



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**7.** Give scientific reason on : Sewage should be released into rivers only after oxidation .



**8.** 19 year old trisha has died after meeting with an accident . Parents are in deep grief and have decided to opt for organ and body donation. What is basic throught process behind the parents action ?



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**9.** Explain the concept of genetically modified crops

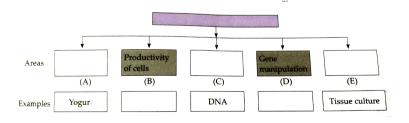


10. Explain DNA fingerprinting.



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**11.** Complete the following tree diagram based on main areas of biotechnology .





**12.** Draw a well labelled diagram fo transgenic potatoes and explain it .



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**13.** Write a comparative note on usefulness of biotechnology

