



SHIKSHA CLASSES

Subject : Science-II
Class : X

Answer Paper
8. Cell biology and Biotechnology

Marks : 20

Q.1: A] Choose the correct alternative.

2

1) A person with symptoms of fatigue, non healing wounds, constant thirst and urge to urination and high blood sugar should be treated with

Ans: (a) Insulin

2) _____ among the following organisms are useful in clearing oil spills.

Ans: (c) Pseudomonas

B] Solve the following question (Any One).

1

1) Complete the analogy :

Insulin : Diabetes :: Interleukin : _____

Ans: Insulin : Diabetes :: Interleukin : Cancer

2) Find odd one out :

BT cotton, Golden rice, BT brinjal, Anabaena

Ans: Anabaena

3) Give answer in one or two words :

The ability of stem cells to self multiply and differentiate into any type of cell.

Ans: Pleuripotency

Q.2: A] Give scientific reason. (Any One)

2

1) DNA finger printing can be done in order to resolve a paternity dispute regarding a child.

Ans: i) DNA fingerprinting is the technique by which the identity of any individual can be established since DNA sequence is unique for every individual.

ii) DNA fingerprinting involves studying the sequence of DNA of the child and the claimed biological fathers.

iii) The sequence of the child is then compared with that of father and the percentage similarities are found.

iv) The person with whom the child DNA shows highest percentage similarity is considered to be biological father. Thus DNA finger printing can be done order to resolve a paternity dispute regarding a child.

2) Organic farming is considered to be the future of agriculture sector.

Ans: i) Organic farming is the use of organic products for farming over chemical pesticides and fertilizers.

- ii) Chemical fertilizers and pesticides are considered to be poisonous if reached to humans through food and water.
- iii) Chemical fertilizers also cause serious deterioration in the fertility of soil.
- iv) Organic farming can overcome all these problems as it uses biofertilizers and biopesticides.
Since organic farming includes complete ban on chemical fertilizers and pesticides, Therefore organic farming is considered to be the future of agriculture sector.

B] Solve the following question. (Any One)

4

1) What is white revolution?

- Ans:**
- i) Dr. Varghese Kurien proved through the co-operative movement and use of biotechnology that Dairy will be a mainstream business.
 - ii) While achieving the self sufficiency in dairy business, various experiments were performed for quality control, newer dairy products and their preservation.
 - iii) Sudden increase in milk and milk products on a large scale is called as white revolution.

2) Define : (i) Bioremediation (ii) Cloning

Ans: (i) Bioremediation :

It is the absorption of or destruction of toxic chemicals and harmful pollutants by plants or microorganisms.

(ii) Cloning :

Production of replica of any cell or an entire organism is called cloning.

3) What are the uses of stem cells?

Ans: Stem cells uses :

1) Regenerative therapy :

Cell therapy stem cells are used to replace dead cells in conditions like diabetes, myocardial infarction, alzheimer's disease parkinson's disease etc.

2) Organ transplantation :

Stem cells are used to produce organs like kidney and liver for organ transplantation.

4) Which precaution will you take during spraying of pesticides?

Ans: The precautions that have to be taken during spraying of pesticides are as follows.

- i) Pesticides should be applied at recommended dose and dilution.
- ii) Do not apply pesticides on hot sunny day, Stormy winds, just before or after rains.
- iii) Animal and worker entry at the fields immediately after application of pesticides should be avoided.
- iv) Container bucket used for mixing pesticides should not be used for domestic purpose.

Q.3: Answer the following (Any Two).

6

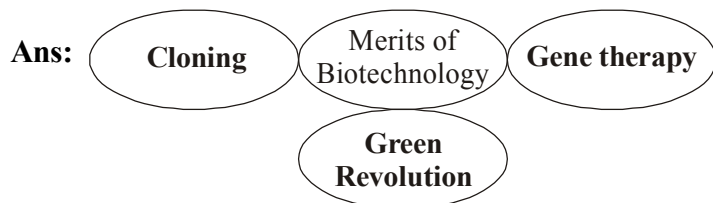
1) Write short note on edible vaccines.

Ans: Edible vaccines :

- i) Work on production of edible vaccines is in progress and presently, potatoes are being produced with the help of biotechnology.

- ii) These potatoes are called transgenic potatoes.
- iii) These potatoes will act against bacteria like *Vibrio cholerae*, *Escherichia coli*.
- iv) Consumption of these raw potatoes generates the immunity against Cholera and the disease caused due to *E. coli*.
- v) This can develop immunity against that pathogen.

2) Complete the chart :



3) Write the importance of medicinal plants.

- Ans:**
- i) Medicinal plants provide three main benefits to the ones who consume them financial benefits, health benefits and society wide benefits like job opportunities.
 - ii) Plants have a preventive nature with respect to onset of any disease.
 - iii) Many plant have antioxidant properties ingestion of whom can prevent the action of free radicals in the host.
 - iv) In some cases the treatment of complex diseases requires the help of certain medicinal plants or their derivatives.
 - v) The active ingredient in plant *Adulsa* can be given to cure cough.

4) Write the commercial application of biotechnology.

Ans: a) Hybrid - seeds :

Genes of two different crops are recombined to form hybrid variety of crops.

b) Genetically modified crops :

Crops developed of desired characters by integrating foreign gene into a crop

c) BT cotton

Produced by introducing gene for a toxin from *Bacillus thuringiensis* with the gene of cotton.

BT Brinjal is also produced similarly.

d) Golden rice :

Gene beta carotene is introduced into a variety of rice.

e) Herbicide tolerant plants :

These are produced as a measure to selectively destroy weeds.

f) Biofertilizers :

Bacteria like *rhizobium*, *Azotobacter*, *Nostoc*, *Anabaena* and *Azolla* are used.

Q.4: Solve the following question. (Any One)

5

1) Write about organ transplantation.

Ans: Organ transplantation :

- 1) In case of failure of organs like kidney and liver, those can be produced with the help of stem cell and transplanted.

- 2) Various organs in the human body either become less efficient or completely functionless due to various reasons like aging, accidents, infections, disorders etc.
- 3) Life of such persons becomes difficult or even fatality may occur under such conditions.
- 4) However, if a person get the necessary organ under such conditions, its life can be saved.
- 5) Availability of donor is an important requirement in organ transplantation.
- 6) Organs such as eyes, lungs, liver, bone, heart, pancreas, kidney and skin can be donated.
- 7) Various factors like blood group, diseases, disorders, age etc of the donar and recipient need to be paid attention during transplantation.

2) Write a note on usefulness and harmfulness of biotechnology.

Ans: Usefulness of biotechnology :

- 1) Biotechnology has the power to give human a good health sustain the environment and also the well being of consumer.
- 2) Industrial biotechnology along with being innovative can produce less waste and less energy an water is consumed in their process.
- 3) The products produced by biotechnology are ecofriendly and reduces the damage to the environment.
- 4) Also their ecofriendly products are toxin free thus making them less hazardous.

Harmfulness of biotechnology :

- 1) Genetic engineering is a technology in biotechnology helps in building numerous commercial and pharmacological products but still be harmful because viral vectors are usually used to carry the desired genes into the host.
- 2) If there viral vector are used in gene therapy there is possibility of them producing disease in the host.
- 3) The genes delivered during gene therapy might also integrate into the host genome in such way that it replaces the vital genes.

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