



# BIOLOGY

**BOOKS - BETTER CHOICE PUBLICATION**

## BIOTECHNOLOGY AND ITS APPLICATIONS

**Very Short Answer Type Questions**

1. What do you understand by biopiracy?



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2. Define the term Biowar.



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3. Which is commonly used Bioweapons?



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4. What are hybridomas?



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5. Give the name for genetically engineered human insulin.



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6. Name the gene which codes the toxin Bt.



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7. Which symbiotic nitrogen fixing cyanobacterium lives in association with Azolla?



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8. Give name of two transgenic crops.



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9. What is the full form of Bt?



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**10.** From which bacterium Bt toxin genes were isolated?



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**11.** What are transgenic bacteria? Illustrate using any one example.



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**12.** What is transgenic organism?



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**13.** Name a natural genetic engineer of plants.

How it engineers the genome?



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**14.** Name the method of cellular defense in all

the eukaryotic organisms.





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**15.** Explain GEAC.



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**16.** What is the use of tailor made plants?



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**17.** How many documented varieties of rice are grown in India.



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**18.** Name the techniques for detecting the pathogen at very early stage.



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**19.** When first clinical gene therapy was given.





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20. What is the sources of complementary strand in mRNA silencing?



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21. How pest resistant plants are developed?  
Which novel strategy is employed in this?



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**22.** What has been done to prevent biopiracy?



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**23.** Define Recombinant Protein.



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**24.** Which peptide chain is missing in Insulin.



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25. How many chains are found in proinsulin.



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## Short Answer Type Questions

1. Explain why is it very difficult to transplant tissues and organs successfully?



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2. What is GEAC? What are its objectives?



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3. What are transgenic bacteria? Illustrate using any one example.



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4. Write a short note on biopiracy.



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5. Write a short note on Biopatent.



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6. What are the problems associated with genetically modified food?



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7. Biopiracy has become an epidemic.

Comment.



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8. What are cry genes? Which organism produces these?



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**9.** How is *Bacillus thuringiensis* useful in biocontrol of insect pests?



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**10.** Write a short note on bioethics.



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**11.** What are transgenic plants? Give two examples of transgenic plants.



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**12.** What is biotechnology? Name two important products of biotechnology.



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**13.** What are transgenic animals? Give two examples of transgenic animals.



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**14.** Explain molecular diagnosis giving one example.



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**15.** What is Ti-plasmid? Name the organism where it is found?



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**16.** What is gene therapy ? Illustrate using the example of adenosine deaminase deficiency (ADA).



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**17.** Give a brief account of recombinant insulin.



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**18.** What are the advantages of edible vaccines ?



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**19.** Distinguish between YAC and BAC.



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**20.** Name any two recombinant proteins. Write their therapeutic uses.



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21. Explain the production of human growth Hormone in E.coli.



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22. Can you suggest a method to remove oil [hydrocarbon) from seeds based on your understanding of rDNA technology and chemistry of oil?





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**23.** Expand GEAC and ELISA.



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**24.** What was the speciality of the milk produced by the transgenic cow Rosie?



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**25.** Name some techniques used for early molecular diagnosis of pathogens and genetic disorders.



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**26.** Explain why Bt. cotton flowers undergo pollination by butterflies and bees in spite of using insect pest resistant?



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**27.** How is PCR used to detect gene mutation in case of suspected cancer patients?



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**28.** Name the first transgenic cow. Which gene was introduced in this cow?



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**29.** Write about Flavr-Savr variety of Tomato.





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**30.** Explain how recombinant hirudin is produced.



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**31.** Write a short note on

Plant Variety Protection and Farmer's Right Act.



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**32.** How are the Transgenic plants useful to us?



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**33.** Write briefly about (a) Biowar, (b) Biopiracy and (c) Biopatents.



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**34.** Write briefly about (a) Genetically modified food (b) Biotechnology and (c) Plant tissue culture.



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**35.** List the disadvantages of production of genetically modified crops.



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**36.** List the advantages of production of genetically modified crops/GMOs genetically modified organisms.



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**37.** What are transgenic animals? Why are these animals being produced?



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**38.** *Bacillus thuringiensis* has great potential in biological control of pests. Discuss.



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**39.** Write a brief account of genetically engineered insulin? How it was prepared.



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**40.** Write short note on Bt cotton.



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**41.** Explain the application of biotechnology in health.



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**42.** Explain the production of Bt-cotton.



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**43.** Write short note on Gene therapy.



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**44.** Write a note on how biotechnology can be used in achieving sustainable agriculture ?



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**45.** Explain why in case of Bt. insecticide protein produced by the bacterium kill the

insect pest but not the cell of bacterium?



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**46.** What do you mean by 'Golden rice' ?



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**47.** Compare and contrast the advantages and disadvantages of production of genetically modified crops.



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**48.** What are Cry proteins? Name an organism that produce it. How has man exploited this protein to his benefit?



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**49.** What is green revolution ?



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**50.** How transgenic animals are helpful in the study of human diseases?



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**51.** How transgenic animals that produce useful products can be created?



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**52.** Explain in brief application of biotechnology in agriculture.



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**53.** Name the nematode that infests and damages tobacco roots. How are transgenic tobacco plants produced to solve this problem?



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**54.** Describe hazards of transgenic animals.



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**55.** Gene expression can be controlled with the help of RNA molecule. Explain the method with an example.



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**56.** Explain Biopiracy with examples.





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**57.** Give some controversies in India related to patent and biopiracy.



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**58.** Differentiate between GMO and Hybrid.



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59. Why is the introduction of genetically engineering lymphocyte into a ADA deficiency patient not a permanent cure? Suggest a possible permanent cure.



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## Long Answer Type Questions

1. Explain the role of biotechnology in therapeutics.



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2. Discuss the various biotechnological applications in agriculture.



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3. Give an account of practical applications of genetic engineering.



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4. Name the nematode that infects and damages the tobacco roots.



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5. How are transgenic tobacco plants produced to solve this problem?



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6. What does Bt. Stand for?



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7. Write a detailed note on Bt. Cotton.



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8. Write short notes on.

Bio-piracy.



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**9.** Write short notes on.

pest resistance in transgenic plants.



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**10.** Explain the steps involved in production of humulin .



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**11.** Ram a two years old baby is deficient in his immune system since birth. His father was told that this was due to an enzyme deficiency which is crucial for the immune system to function. Name the enzyme, the cause of its deficiency and the cure of the disease?



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**12.** Explain how the pH of the gut of caterpillar is sustained acidic rather than basic (alkaline)

and they are subjected to cry-Protein produced by *Bacillus thuringiensis*?



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**13.** A baby lost his mother in infancy. He was totally dependent on breast feeding as cows milk creates digestive problems. Name the cow whose milk is nutritionally more balanced than normal cow's milk. Which extra nutritional element does it contain and how much! magnitude?



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**14.** Define 'Germ line gene therapy'.



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**15.** Write a short note on

Animals as organ donors for humans.



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**16.** Give three critical research areas of biotechnology.



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**17.** Explain GM foods.



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**18.** Explain stem cell technology and its applications.



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