

Roll Number

SET A



INDIAN SCHOOL MUSCAT
SECOND PRE - BOARD EXAMINATION
BIOLOGY (044)

CLASS: XII

26.02.2022

Time Allotted: 2 hrs

Max. Marks: 35

GENERAL INSTRUCTIONS

- i) All questions are compulsory.
- ii) The question paper has three sections and 13 questions. All questions are compulsory.
- iii) Section–A has 6 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has a case-based question of 5 marks.
- iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- v) Wherever necessary, neat and properly labeled diagrams should be drawn.

Section A

1. Cancer is the most dreadful disease can be treated by various methods. In one of the methods, 2 patients are administered with biological response modifiers. Name one such substance act as biological response modifiers and explain how it acts.
2. Microbes are used in household food products. State any one food product and explain the role of 2 microbe.

OR

Gopal had undergone Kidney transplant recently. A bioactive molecule is administered to oppose kidney rejection by the body tissue. What is that bio active molecule and also name the microbe from which it is extracted.

3. A doctor diagnosed that the immune system of a patient has been suppressed. A special test was 2 done as confirmatory test. Name the test conducted and the disease the patient is suffering. Write the causative pathogen and based on which principle the test works.

4. Microorganisms are found everywhere. Which group of bacteria are found in anaerobic sludge and rumen of the cattle? Explain the role that they play in their respective place. 2
5. Light plays vital role in both plants and animals. Explain how light is inevitable for both plants and animals. 2
6. a) Mammals show wide range of geographical distribution. Which feature of the mammals enable them to show such wide distribution? 2
b) Do plants belong to regulators or conformers? Justify your answer.

OR

The kangaroo rat lives in desert which can survive without external supply of water. How this animal could meet its body water requirement?

Section B

7. In UK April showers will bring May flowers. Those beautiful blooms and their plentiful pollens will bring sneezing, running nose and itchy eyes for many people. What is this condition known as? How do these symptoms appear in the body? How the affected people can be treated? 3
- OR**
- A drug addict claims that he has seen patterns of lights when it is dark and hears voice when no one is spoken. What is this condition known as? Name the chemical responsible for this condition and mention the source plant for this chemical substance.
8. A farmer wants to shift his agriculture pattern to organic farming. As a biology student suggest any three biofertilisers two from bacteria and one from fungi. Describe how they benefit the crops. 3
9. Restriction endonucleases cut the DNA at specific sites. Name those sites and explain the mechanism of action of those enzymes. 3
10. A tourist visited the countries Canada and India and found that India has rich bio diversity than Canada. When he approached his professor friend for the reason. His friend gave him three possibilities. What are those possibilities? 3
11. According to Robert May, the Global species diversity is estimated about 7 million. Which group in invertebrates, plants and vertebrates contribute maximum respectively? Why is it difficult to estimate prokaryotes? 3

12. Rosie is the First Transgenic cow. What is meant by “Transgenic cow”? State the significance of this cow. 3

Section C

13. Forensic officials collected skeleton from the fire accident site, three of which were children. They were able to isolate very small amount of DNA from these skeletons. The DNA obtained was used in Polymerase Chain Reaction (PCR). Genetic fingerprinting was then carried out on this DNA to identify the skeleton of the person. During PCR, DNA is heated to 94° C, Primers, nucleotides and enzymes are added to the mixture. 5
- a) Explain why forensic officials used Polymerase Chain Reaction in their investigation.
 - b) Explain why DNA is heated to 94° C?
 - c) What is primer and why these are added during the PCR
 - d) State why the enzymes used in PCR must be thermostable.

OR

Gel Electrophoresis is the most effective way of separating DNA fragments of varying sizes. To separate the DNA in Gel electrophoresis, the DNA is loaded into pre – cast well in the gel and a current applied. The DNA fragments are separated based on their size through sieving effect of the gel matrix.

- a) Name the chemical substance used as matrix in gel electrophoresis.
- b) What is the charge on DNA? In which direction DNA will move in gel electrophoresis?
- c) How are separated DNA visualized?

End of the Question Paper

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SET B



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- v) Wherever necessary, neat and properly labeled diagrams should be drawn.

Section A

1. The fungus yeast is used commercially for various purposes. State any two genera of yeast and its commercial application 2

OR

Spleen is the secondary lymphoid organ. What is its role in immunity?

2. Some of the helminths are known to be pathogenic for human. Name any such helminthes and the disease caused by them 2
3. Microorganisms are found everywhere. Which group of bacteria are found in anaerobic sludge digester and rumen of the cattle? Explain the role that they play in their respective place. 2
4. Light plays vital role in both plants and animals. Explain how light is inevitable for both plants and animals. 2
5. a) Mammals show wide range of geographical distribution. Which feature of the mammals enable them to show such wide distribution? 2

b) Do plants belong to regulators or conformers? Justify your answer.

OR

The kangaroo rat lives in desert which can survive without external supply of water. How this animal could meet its body water requirement?

6. A doctor diagnosed that the immune system of a patient has been suppressed. A special test was done as confirmatory test. Name the test conducted and the disease the patient is suffering. Write the causative pathogen and based on which principle the test works. 2

Section B

7. Rosie is the First Transgenic cow. What is meant by “Transgenic cow”? State the significance of this cow. 3
8. Biodiversity is all the different kinds of life around us. Earth’s rich biodiversity is vital for the very survival of mankind. Explain why we should conserve bio diversity. 3
9. A tourist visited the countries Canada and India and found that India has rich bio diversity than Canada. When he approached his professor friend for the reason. His friend gave him three possibilities. What are those possibilities? 3
10. ECORI is the restriction endonuclease enzyme. Explain how restriction enzymes are named and explain using ECORI as example. What is the recognizing site for ECORI enzyme? 3
11. A farmer wants to shift his agriculture pattern to organic farming. As a biology student suggest any three biofertilisers two from bacteria and one from fungi. Describe how they benefit the crops. 3
12. In UK April showers will bring May flowers. Those beautiful blooms and their plentiful pollens will bring sneezing, running nose and itchy eyes for many people. What is this condition known as? How do these symptoms appear in the body? How the affected people can be treated? 3

OR

A drug addict claims that he has seen patterns of lights when it is dark and hears voice when no one is spoken. What is this condition known as? Name the chemical responsible for this condition and mention the source plant for this chemical substance.

Section C

13. Forensic officials collected skeleton from the fire accident site, three of which were children. They 5
were able to isolate very small amount of DNA from these skeletons. The DNA obtained was used
in Polymerase Chain Reaction (PCR). Genetic fingerprinting was then carried out on this DNA to
identify the skeleton of the person. During PCR, DNA is heated to 94° C, Primers, nucleotides and
enzymes are added to the mixture.
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Gel Electrophoresis is the most effective way of separating DNA fragments of varying sizes. To
separate the DNA in Gel electrophoresis, the DNA is loaded into pre – cast well in the gel and a
current applied. The DNA fragments are separated based on their size through sieving effect of the
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Section A

1. *Opuntia* is found in desert and Seals are found in polar seas. How are they adapted to live successfully in their habitat? 2

OR

Competition causes extinction of species. Substantiate this statement based on the extinction of Abingdon tortoise.

2. Light plays vital role in both plants and animals. Explain how light is inevitable for both plants and animals. 2
3. 'BOD is calculated as an index of water pollution'. Do you agree with this statement? Why? Expand BOD. 2
4. Binu and Parekar are two nursery students. Parekar gets common cold very often Binu not. Which group of viruses causing common cold? What are the common barriers protecting Binu from cold? 2
5. The fungus, Yeasts are used commercially for various purposes. State any two Genera of yeast and its commercial application. 2

OR

Spleen is a secondary lymphoid organ. What is its role in immunity?

6. Helminths are parasitic worms that cause a wide variety of infectious diseases. Name any two such Helminths pathogenic for human and disease caused by them. 2

Section B

7. A tourist visited the countries Canada and India and found that India has rich bio diversity than Canada. When he approached his professor friend for the reason. His friend gave him three possibilities. What are those possibilities? 3
8. Biodiversity is all the different kinds of life around us. Earth's rich biodiversity is vital for the very survival of mankind. State the reasons for conserving bio diversity which will be placed under three groups of arguments. 3
9. Rosie is the First Transgenic cow. What is meant by "Transgenic cow"? State the significance of this cow. 3
10. EcoRI is the restriction enzyme. Explain the naming of this restriction endonuclease enzyme and write down its recognition site. 3
11. Penicillin was the first antibiotic to be discovered. What do you mean by the term "antibiotic"? Who were all scientists awarded Nobel prize for the discovery of Penicillin. Which is the bacterium against which penicillin acts? 3
12. In UK April showers will bring May flowers. Those beautiful blooms and their plentiful pollens will bring sneezing, running nose and itchy eyes for many people. What is this condition known as? How do these symptoms appear in the body? How the affected people can be treated? 3

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Section C

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