

Roll Number

SET A



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

Term 2

CLASS: XII

Time Allotted: 2 hrs

13.04.2022

Max. Marks: 35

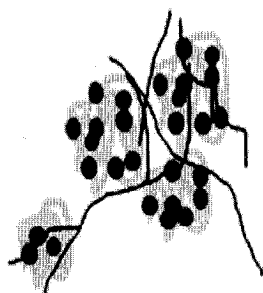
**GENERAL INSTRUCTIONS**

- 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 The immune system of a person is suppressed. In the ELISA test, he was found positive to a 2 pathogen.
  - a. Name the disease the patient is suffering from and its causative organism.
  - b. Which cells of the body are affected by the pathogen?
- 2 Enzymes are biological catalyst. They speed up the biochemical reactions in the living system. 2 Recently we have exploited their potential in industries as well. Identify two enzymes and their industrial applications.

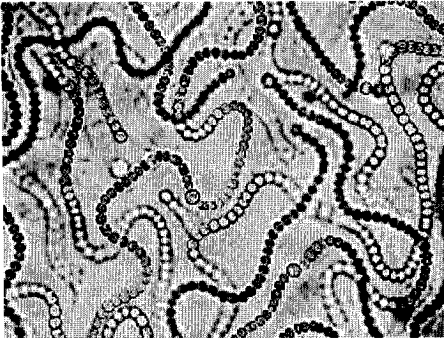
**OR**



The above picture shows the flocs in a sewage treatment plant.

What are flocs? How are they important in the biological waste treatment?

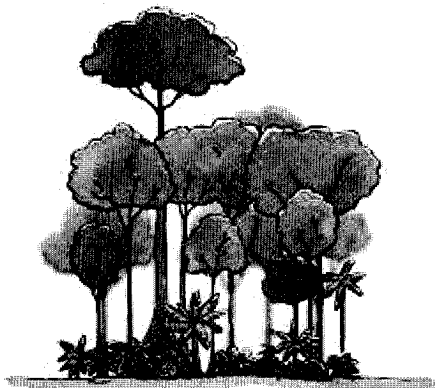
- 3 Sanjay is addicted to alcohol. He could not get his regular dose of alcohol on a certain day. His body started showing some withdrawal symptoms. List any four such withdrawal symptoms. 2
- 4 Cyanobacteria can be useful in the paddy fields. Discuss. 2



- 5 Living organisms acquire various means and adaptations during the course of evolution. Give any two examples of defense mechanisms in plants against herbivory? 2

6

2



The given picture depicts a stable community. Describe any two characteristics of it.

**OR**

It is difficult to estimate the global diversity of prokaryotes. Justify this statement giving two reasons.

### **SECTION B**

- 7 Differentiate between benign and malignant tumor. 3

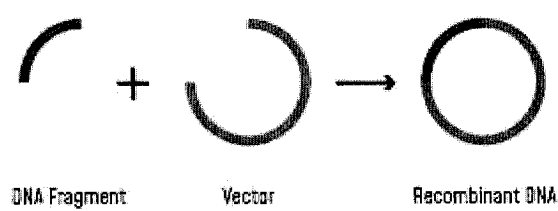
**OR**

Describe any three preventive measures to control microbial infections.

8      The following table shows certain diseases, their causative organisms and symptoms. Fill the gaps.      3

Name of the Disease		Causative organism	Symptoms
(i)	Ascariasis	Ascaris	_____
(ii)	_____	Trichophyton	Appearance of dry, scaly lesions on various parts of the body
(iii)	Typhoid	_____	High fever, weakness, headache, stomach pain, constipation
(iv)	Pneumonia	Streptococcus pneumoniae	_____
(v)	_____	Rhino viruses	Nasal congestion and discharge, sorethroat, cough, headache
(vi)	Filariasis	_____	Inflammation in lower limbs

9      3



Plasmids are used as cloning vectors in recombinant DNA technology. How are they different from the chromosomal DNA? Give one example of a plasmid vector used in rDNA technology.

10      Predation is an interspecific interaction in which it is beneficial for one species at the same time detrimental for the other species involved. But predation has some major roles in our environment. List any three key roles played by predators in the ecosystem.      3

11      Differentiate between the two types of conservation of species by giving one example each.      3

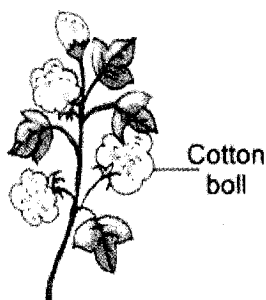
12      Use of tetracycline and ampicillin resistant sites in pBR322 can be used as selectable markers. But it is a cumbersome procedure involving simultaneous platings. To avoid this we use insertional inactivation. Explain.      3

## SECTION C

- 13 The polymerase chain reaction (PCR) test for COVID-19 is a molecular test that analyzes your 5 upper respiratory specimen, looking for genetic material (ribonucleic acid or RNA) of SARS-CoV-2, the virus that causes COVID-19. It's a test to detect genetic material from a specific organism, such as a virus. The test detects the presence of a virus if you have the virus at the time of the test. The PCR test has been the gold standard test for diagnosing COVID-19 since authorized for use in February 2020. It's accurate and reliable.

- Identify the use of PCR in r-DNA technology.
- List the three steps involved in PCR.
- Name the enzyme used in PCR and its source organism.

OR



The above picture shows Bt cotton. Scientists have developed pest resistant plants by transferring genes from bacteria to the plants. Other plants like Bt tobacco, Bt brinjal, Bt maize are also common.

- Identify the protein present in *Bacillus thuringiensis* which can destroy the insects consuming it.
- Briefly describe the insecticidal action of the protein.
- Name the vector used for transferring the gene for this protein to the Cotton plant.
- Give example of one insect against which this protein is effective.

**End of the Question Paper**

Roll Number

SET B



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

Term 2

CLASS: XII

Time Allotted: 2 hrs

13.04.2022

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.

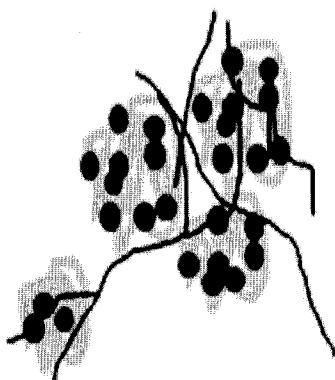
**SECTION A**

- 1 Match the items in Column 'A' and Column 'B' and choose the correct answer.

2

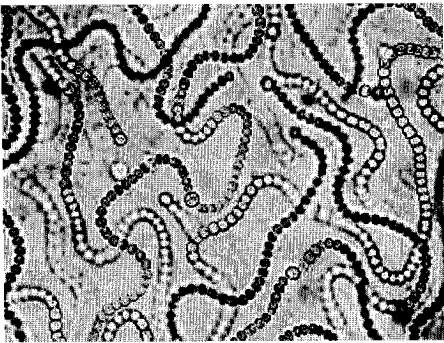
Column A		Column B	
(i)	Lady bird	(A)	<i>Methanobacterium</i>
(ii)	Mycorrhiza	(B)	<i>Trichoderma</i>
(iii)	Biological control	(C)	Aphids
(iv)	Biogas	(D)	<i>Glomus</i>

OR

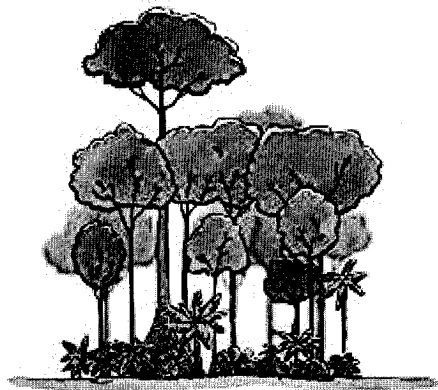


The above picture shows the flocs in a sewage treatment plant.  
 What are flocs? How are they important in the biological waste treatment?

- 2 A patient is suffering from breathing problem and his nails and lips turned gray. 2
- a. Name the disease the patient is suffering from and its causative organism.
- b. Why does the patient suffer from respiratory problem?
- 3 Sanjay is addicted to alcohol. He could not get his regular dose of alcohol on a certain day. His 2
- body started showing some withdrawal symptoms. List any four such withdrawal symptoms.
- 4 Living organisms acquire various means and adaptations during the course of evolution. Give any 2
- two examples of defense mechanisms in plants against herbivory?
- 5 Cyanobacteria can be useful in the paddy fields. Discuss. 2



- 6 2



The given picture depicts a stable community. Describe any two characteristics of it.

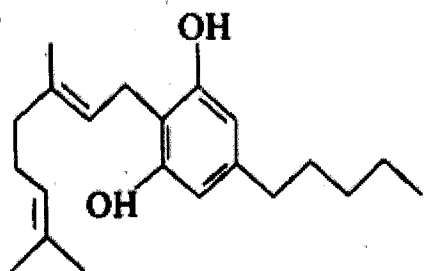
**OR**

It is difficult to estimate the global diversity of prokaryotes. Justify this statement giving two reasons.

SECTION B

7 The outline structure of a drug is given below.

3



- (a) Which group of drugs does this represent?
- (b) What are the modes of consumption of these drugs?
- (c) Name the organ of the body which is affected by consumption of these drugs.

OR

Describe any three preventive measures to control microbial infections.

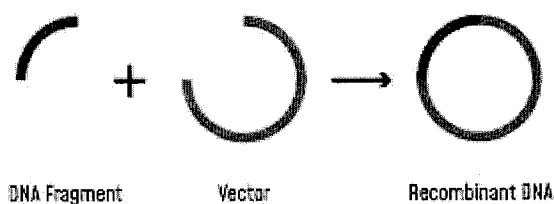
8 The following table shows certain diseases, their causative organisms and symptoms. Fill the gaps. 3

Name of the Disease		Causative organism	Symptoms
(i)	Ascariasis	Ascaris	_____
(ii)	_____	Trichophyton	Appearance of dry, scaly lesions on various parts of the body
(iii)	Typhoid	_____	High fever, weakness, headache, stomach pain, constipation
(iv)	Pneumonia	Streptococcus pneumoniae	_____
(v)	_____	Rhino viruses	Nasal congestion and discharge, sorethroat, cough, headache
(vi)	Filariasis	_____	Inflammation in lower limbs

- 9 Predation is an interspecific interaction in which it is beneficial for one species at the same time detrimental for the other species involved. But predation has some major roles in our environment. List any three key roles played by predators in the ecosystem. 3
- 10 Insulin is taken as injection by diabetes patients. Recombinant DNA technology made a breakthrough in the medical field which helps us to produce insulin in a large amount. Which company produced insulin by r DNA technology first? What was the challenge faced in this research initially and how was it resolved by the company? 3

11 Differentiate between the two types of conservation of species by giving one example each. 3

12 3

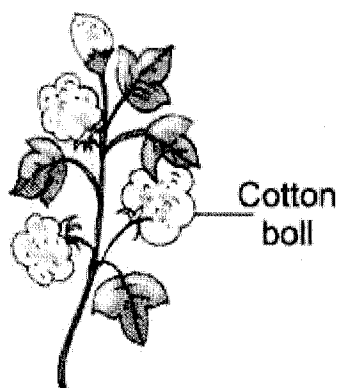


Plasmids are used as cloning vectors in recombinant DNA technology. How are they different from the chromosomal DNA? Give one example of a plasmid vector used in rDNA technology.

### SECTION C

- 13 The polymerase chain reaction (PCR) test for COVID-19 is a molecular test that analyzes your 5 upper respiratory specimen, looking for genetic material (ribonucleic acid or RNA) of SARS-CoV-2, the virus that causes COVID-19. It's a test to detect genetic material from a specific organism, such as a virus. The test detects the presence of a virus if you have the virus at the time of the test. The PCR test has been the gold standard test for diagnosing COVID-19 since authorized for use in February 2020. It's accurate and reliable.
- Identify the use of PCR in r-DNA technology.
  - List the three steps involved in PCR.
  - Name the enzyme used in PCR and its source organism.

OR



The above picture shows Bt cotton. Scientists have developed pest resistant plants by transferring genes from bacteria to the plants. Other plants like Bt tobacco, Bt brinjal, Bt maize are also common.

- a) Identify the protein present in *Bacillus thuringiensis* which can destroy the insects consuming it.
- b) Briefly describe the insecticidal action of the protein.
- c) Name the vector used for transferring the gene for this protein to the Cotton plant.
- d) Give example of one insect against which this protein is effective.

**End of the Question Paper**

Roll Number

SET C



INDIAN SCHOOL MUSCAT  
SECOND PRE - BOARD EXAMINATION

**BIOLOGY (044)**

CLASS: XII

TERM 2

Time Allotted: 2 hrs

13.04.2022

Max. Marks: 35

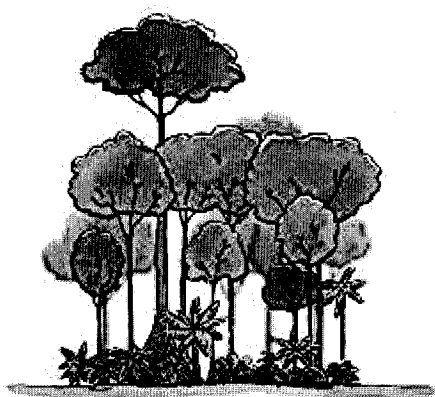
**GENERAL INSTRUCTIONS**

- 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

2



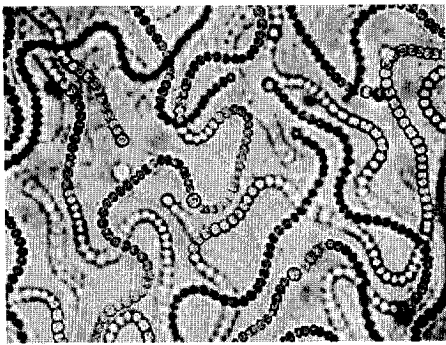
The given picture depicts a stable community. Describe any two characteristics of it.

**OR**

It is difficult to estimate the global diversity of prokaryotes. Justify this statement giving two reasons.

2 Cyanobacteria can be useful in the paddy fields. Discuss.

2

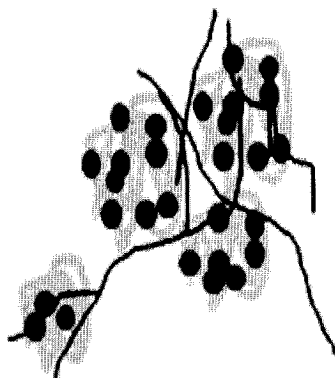


3 Identify the source organisms of the following products:

2

- a) Swiss cheese
- b) Citric Acid
- c) Baker's yeast
- d) Statin

**OR**



The above picture shows the flocs in a sewage treatment plant.

What are flocs? How are they important in the biological waste treatment?

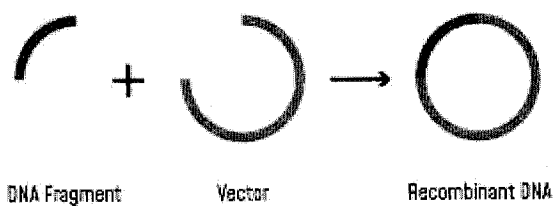
4 Living organisms acquire various means and adaptations during the course of evolution. Give any two examples of defense mechanisms in plants against herbivory? 2

5 Sanjay is addicted to alcohol. He could not get his regular dose of alcohol on a certain day. His body started showing some withdrawal symptoms. List any four such withdrawal symptoms. 2

6 Write the symptoms of patients suffering from malaria. Which chemical is responsible for it? 2

7

3



Plasmids are used as cloning vectors in recombinant DNA technology. How are they different from the chromosomal DNA? Give one example of a plasmid vector used in rDNA technology.

- 8 All of us are born with a non-specific type of immunity. Name the type of immunity and different types. 3

OR

Describe any three preventive measures to control microbial infections.

- 9 Differentiate between the two types of conservation of species by giving one example each. 3
- 10 The following table shows certain diseases, their causative organisms and symptoms. Fill the gaps. 3

Name of the Disease		Causative organism	Symptoms
(i)	Ascariasis	Ascaris	_____
(ii)	_____	Trichophyton	Appearance of dry, scaly lesions on various parts of the body
(iii)	Typhoid	_____	High fever, weakness, headache, stomach pain, constipation
(iv)	Pneumonia	Streptococcus pneumoniae	_____
(v)	_____	Rhino viruses	Nasal congestion and discharge, sorethroat, cough, headache
(vi)	Filariasis	_____	Inflammation in lower limbs

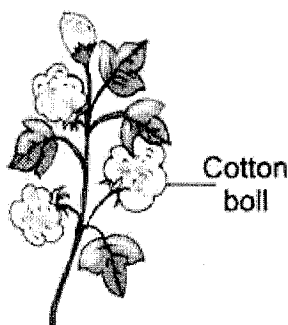
- 11 Use of tetracycline and ampicillin resistant sites in pBR322 can be used as selectable markers. But it is a cumbersome procedure involving simultaneous platings. To avoid this we use insertional inactivation. Explain. 3

- 12 Who proposed Species-area relationship? What is the shape of the graph obtained? How does Z value change when a very large area is considered? 3

### SECTION C

- 13 The polymerase chain reaction (PCR) test for COVID-19 is a molecular test that analyzes your upper respiratory specimen, looking for genetic material (ribonucleic acid or RNA) of SARS-CoV-2, the virus that causes COVID-19. It's a test to detect genetic material from a specific organism, such as a virus. The test detects the presence of a virus if you have the virus at the time of the test. The PCR test has been the gold standard test for diagnosing COVID-19 since authorized for use in February 2020. It's accurate and reliable. 5
- Identify the use of PCR in r-DNA technology.
  - List the three steps involved in PCR.
  - Name the enzyme used in PCR and its source organism.

OR



The above picture shows Bt cotton. Scientists have developed pest resistant plants by transferring genes from bacteria to the plants. Other plants like Bt tobacco, Bt brinjal, Bt maize are also common.

- Identify the protein present in *Bacillus thuringiensis* which can destroy the insects consuming it.
- Briefly describe the insecticidal action of the protein.
- Name the vector used for transferring the gene for this protein to the Cotton plant.
- Give example of one insect against which this protein is effective.

**End of the Question Paper**