

- A. There are a **Total of 26 Questions** and **Five Sections** in the Question Paper. All questions are **Compulsory**.

- B. **Section A** contains question number **1 to 5**, **Very Short Answer** type questions of **One Mark** each.
- C. **Section B** contains question number **6 to 10**, **Short Answer Type I** questions of **Two Marks** each.
- D. **Section C** contains question number **11 to 22**, **Short Answer Type II** questions of **Three Marks** each.
- E. **Section D** contains question number **23**, **Value-Based Question** of **Four Marks**.
- F. **Section E** contains question number **24 to 26**, **Long Answer Type** questions of **Five Marks** each.
- G. There is no overall choice in the question paper, however, an **Internal Choice** is provided in **One Question** of **Two Marks**, one question of **Three Marks** and all **Three Questions** of **Five Marks**. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.

Section A

1

Are clones genetically and morphologically similar to parent ?

[1]

2

List two uses of cloned genes in molecular diagnostics.

[1]

3

What would happen to a population when birth rate decreases and death rate increases ?

[1]

4

Name artificial methods of vegetative propagation.

[1]

5

Name any two types of cells that act as 'cellular barriers' to provide innate immunity in humans.

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In the whiptail lizards only the females are born generation after generation. There are no males. How is this possible ?

[2]

7

Mention the phenomenon of pleiotropy by giving an example.

[2]

8

Name the following:

(a) The semi-dwarf variety of wheat is high-yielding and disease-resistant.

(b) Any one inter-specific hybrid mammal.

[2]

9

Explain with the help of a suitable example the naming of a restriction endonuclease.

[2]

OR

State how *Agrobacterium tumefaciens* has been made a useful cloning vector to transfer DNA to plant cells.

[2]

10



Identify the type of the given ecological pyramid and give one example each of pyramid of number and pyramid of biomass in such cases.

[2]

Section C

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12

List the number of base pairs in :

- (i) lambda bacteriophage
- (ii) E.coli and
- (iii) haploid content of human DNA.

[3]

13

Write the importance of MOET.

[3]

14

A team of students are preparing to participate in the interschool sports meet. During a practice session you find some vials with labels of certain cannabinoids.

- (a) Will you report to the authorities? Why?
- (b) Name of a plant from which such chemicals are obtained.
- (c) Write the effect of these chemicals on human body.

[3]

15

Explain the significance of satellite DNA in DNA fingerprinting technique.

[3]

16

Explain J-Shaped pattern of population growth.

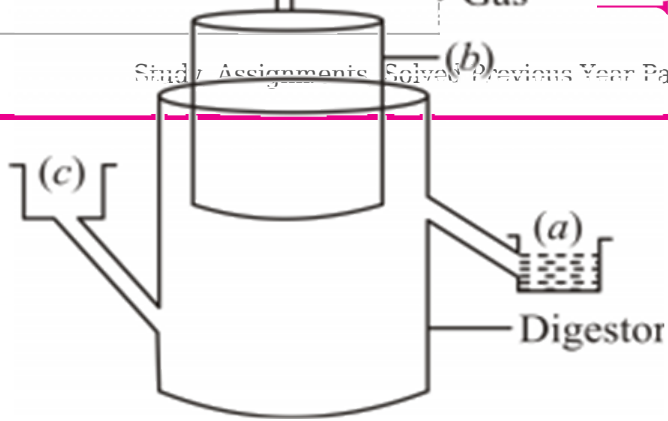
[3]

OR

Discuss role of predators in an ecosystem.

[3]

17



The diagram above is that of a typical biogas plant. Explain the sequence of events occurring in a biogas plant. Identify a, b and c.

[3]

18

Write a note on Biological Oxygen Demand (B.O.D.).

[3]

19

State the medicinal value and the bioactive molecules produced by *Streptococcus*, *Monascus* and *Trichoderma*.

[3]

20

Name the hormones secreted by the following structures?

1. Corpus luteum
2. Leydig cells
3. Hypothalamus
4. Pituitary

[3]

21

Make a table showing characters of pea selected by Mendel.

[3]

22

Many plant and animal species are on the verge of their extinction because of loss of forest land by indiscriminate use by the humans. As a biology student what method would you suggest along with its advantages that can protect such threatened species from getting extinct?

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Section D

23

(a) As a senior biology student you have been asked to demonstrate to the students of secondary level in your school, the procedure(s) that shall ensure cross-pollination in a hermaphrodite flower. List the different steps that you would suggest and provide reasons for each one of them.

(b) Draw a diagram of a section of a megasporangium of an angiosperm and label funiculus, micropyle, embryo sac and nucellus.

[4]

Section E

24

Explain the following terms briefly

(a) Single cell proteins (b) Biopatent (c) Bioethics (d) Biopiracy (e) Genetically modified food.

[5]

OR

What is PCR? List the three main steps. Show the steps with a diagrammatic sketch.

[5]

25

Describe ecological role of biodiversity.

[5]

OR

Draw a flow diagram showing typical food chain with energy flow and cycling of materials. Give a few examples of food chains.

[5]

26

Give a brief summary of Darwin's theory of evolution and evidences in favor of it and its drawbacks.

[5]

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- (a) Name the primates that lived about 15 million years ago. List their characteristic features.
- (b) (i) Where was the first man-like animal found?
- (ii) Write the order in which Neanderthals, *Homo habilis* and *Homo erectus* appeared on earth. State the brain capacity of each one of them.
- (iii) When did modern *Homo sapiens* appear on this planet?

[5]