ISC SEMESTER 2 EXAMINATION SPECIMEN QUESTION PAPER BIOLOGY PAPER 1 (THEORY)

Maximum Marks: 35
Time allowed: One and a half hour
Candidates are allowed an additional 10 minutes for only reading the paper.
They must NOT start writing during this time.
Internal choices have been provided in one question in Section B and one question in Section C.
The intended marks for questions or parts of questions are given in brackets. [ ]

## SECTION A - 7 MARKS

## Question 1

(i) Give the biological name of the causative agent of gonorrhoea.
(ii) Sonora - 64 is a variety of:
(a) Wheat
(b) Rice
(c) Maize
(d) Sugarcane
(iii) Assertion: PAN is a secondary pollutant.

Reason: The secondary pollutants are produced by the combination of primary emitted pollutants in the atmosphere.
(a) Both assertion and reason are true, and reason is the correct explanation of assertion.
(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both assertion and reason are false.
(iv) Give one significant contribution of Prof. R. Mishra.
(v) Expand the term ADA.
(vi) A substance that stimulates the production of antibodies is called $\qquad$ .
(vii) Why does a large ozone hole develop specifically over Antarctica?

## SECTION B (16 MARKS)

## Question 2

Briefly explain the role of the following in providing defense against infections in human body:
(i) B-cells
(ii) T-cells

Question 3
What is the role of a probe in recombinant DNA technology?

## Question 4

The level of air pollution is very high in a city. Suggest any four measures which should be taken by the government to control it.

## Question 5

(i) If $20000 \mathrm{~K} \mathrm{Cal} \mathrm{energy} \mathrm{is} \mathrm{available} \mathrm{at} \mathrm{the} \mathrm{level} \mathrm{of} \mathrm{producers}$, amount of energy available at the level of secondary consumers.

## OR

(ii) The number of mice in a laboratory was 100 on a particular day. After one year their number increased to 120 . Calculate the growth rate in the population.

## Question 6

Give any four advantages of mutation breeding.

## Question 7

Name and describe the technique that helps in separation of DNA fragments.

## Question 8

Which molecules are called molecular scissors? Why are they called so?

## Question 9

Differentiate between primary succession and secondary succession with appropriate examples.

## SECTION C (12 MARKS)

## Question 10

Study the graph given below and answer the following questions:

(i) Explain the ecological principle represented by the graph and write a mathematical expression for the same.
(ii) What will happen if the slope of the line ' $b$ ' becomes steeper?

Question 11
Explain the steps involved in the process of plant breeding.
Question 12
The rDNA technology has provided a method to control the nematode parasite Meloidogyne incognita. Explain the principle involved in this technique.

## Question 13

(i) Consider the amount of organic matter at the different trophic levels in an ecosystem given below:

| Trophic Level | Amount of organic <br> matter (in Kg) |
| :--- | :---: |
| Tertiary consumers | 250 |
| Primary consumers | 150 |
| Primary producers | 100 |
| Secondary Consumers | 200 |

On the basis of the data provided above, construct an ecological pyramid. Comment upon its nature giving at least one example of the type of organism occupying each of the above mentioned trophic levels.

OR
(ii) On the basis of the demographic data of a country given below, construct an age pyramid and explain whether the population is stable, declining or growing.

| Age group | No. of individuals |
| :--- | :---: |
| Pre-reproductive | 20,000 |
| Reproductive | 15,000 |
| Post-reproductive | 10,000 |

