

**Pratap Public School, Karnal**  
**Pre-Board Examination - 2021-2022**  
**Class - XII**  
**Subject- Biology (044)**

Time : 2 Hours

M.M :35

Name ..... Roll No. .... Section .....

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. List any two situations when a medical doctor could recommend injection of preformed antibodies into the body of a patient. Name this kind of immunization and mention its advantages. (2)
2. Name the blank spaces a, b, c and d from the table given below:

Type of microbe	Scientific name	Product	Medical application
Fungus	a	Cyclosporin	b
c	Monascus purpureus	Statin	d

3. Name the type of cell the AIDS virus first enters into after getting inside the human body. Explain the sequence of events that the virus undergoes within these cells to increase their progeny. (2)
4. How did a citizen group called Friends of Arcata Marsh, Arcata, California and USA, help to improve water quality of the marshland using Integrated Waste Water Treatment? Explain in four steps. (2)

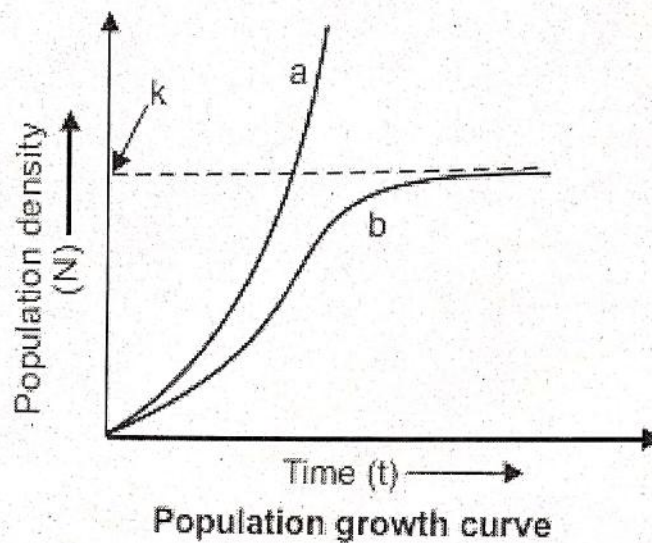
**OR**

An organic farmer relies on natural predation for controlling plant pests and diseases. Justify giving reasons why this is considered to be a holistic approach.

5. Name the type of interaction seen in each of the following examples:

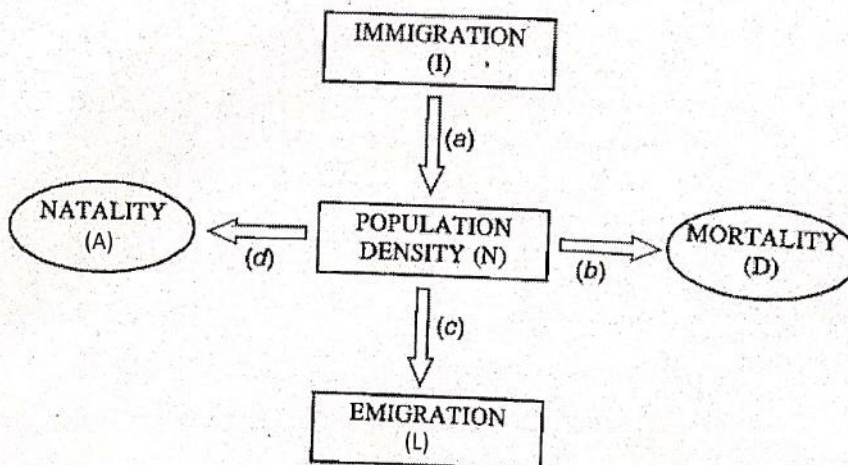
- (i) Ascaris worms living in the intestine of humans
- (ii) Wasp pollinating fig inflorescence.
- (iii) Clown fish living among the tentacles of sea anemone.
- (iv) Cuckoo lays eggs in the nest of the crow. (2)

6. Identify the curves 'a' and 'b' shown in the graph given below. List the conditions responsible for growth patterns 'a' and 'b'.



OR

Study the following figure:



- a) If  $N$  is the population density at time  $t$ , then what would be its density at time  $(t + 1)$ ? Give the formula.
- b) In a barn, there were 30 rats. 5 more rats enter the barn and 6 out of the total rats were eaten by the cats. If 8 rats were born during the time period under consideration and 7 rats left the barn, find out the resultant population at time  $(t + 1)$ . (2)

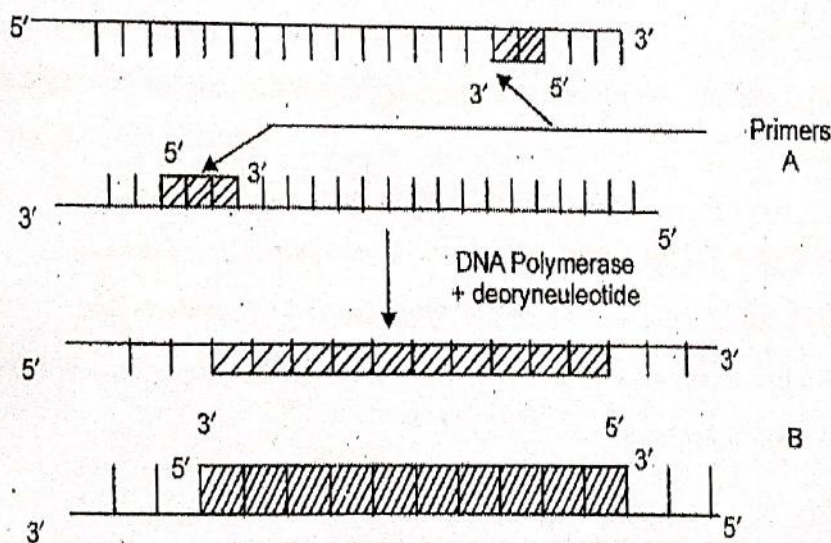
## Section-B

7. a) What happens to a normal cell in a body when oncogenes get activated under certain conditions?  
 (b) Which techniques are useful to detect cancer of internal organs?  
 (c) Why are cancer patients often given alpha-interferon during their treatment? (3)
- 8.i) Name the pathogen that causes amoebiasis in humans. Give the symptoms and the mode of transmission of the disease.  
 ii) Name the host and the site where the following occur in the life cycle of a malarial parasite.  
 (a) Formation of gametocytes  
 (b) Fusion of gametocytes

OR

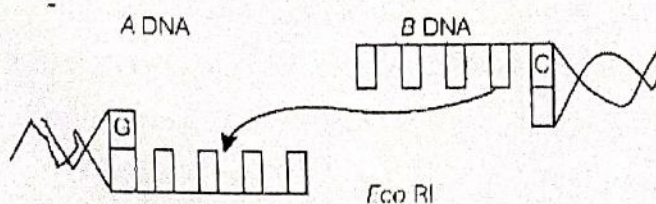
A group of youth were having a 'rave party' in an isolated area and was raided by police. Packets of 'smack' and syringes with needles were found dis littered around.

- (i) Why is taking 'smack' considered an abuse?  
 (ii) Write the chemical name of 'smack' and the name of its source plant.  
 (iii) Syringes and needles used by the youth for taking the drug could prove to be very fatal. Why? (3)
9. i) Identify steps A and B in a cycle of polymerise chain reaction given below:



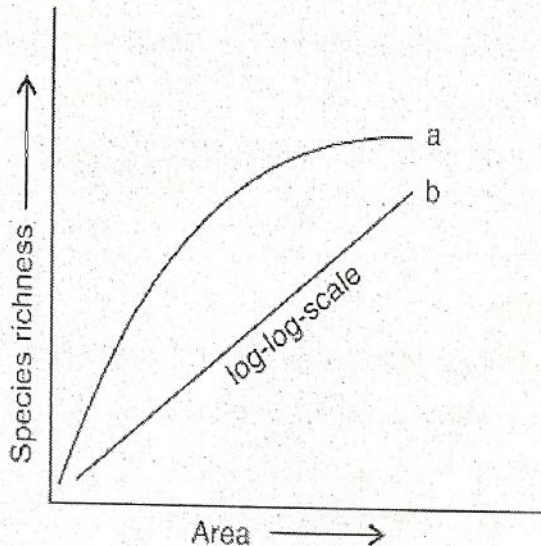
- ii) State the specific characteristic feature of the enzyme in carrying step B. (3)

10. The following illustrates the linking of DNA fragments.



- (i) Write the name of A and B.
- (ii) Complete the palindrome, which is recognised by EcoRI.
- (iii) Write the name enzyme that can link the two DNA fragments.

11. The following graph shows the species-area relationship.



Answer the following questions as directed:

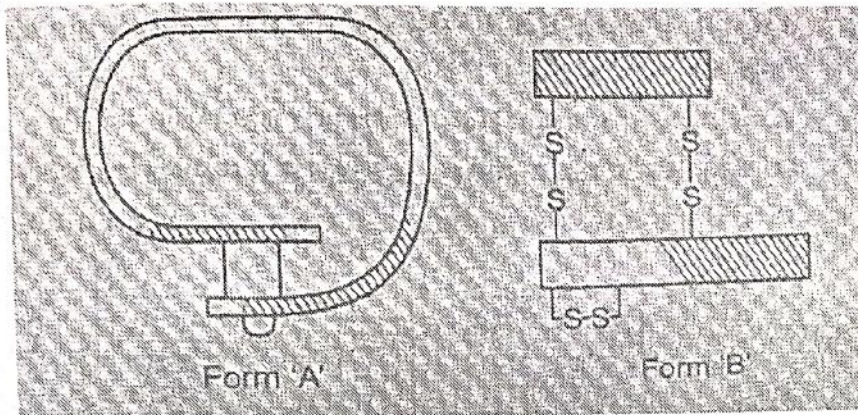
- (i) Name the naturalist who studied the kind of relationship shown in the graph. Write the observations made by him.
  - (ii) Write the situations as discovered by the ecologists when the value of 'Z' (slope of the line) lies between:
    - (a) 0.1 and 0.2
    - (b) 0.6 and 1.2 What does 'Z' stand for?
  - (iii) When would the slope of the line 'b' become steeper?
12. Alien species are highly invasive and are a threat to indigenous species. Substantiate this statement with any three examples.

(3)

### SECTION-C

13. Insulin used to cure diabetes was earlier extracted from pancreas of slaughtered cattle and pigs. Insulin extracted from an animal source, though caused some patients to develop allergy or other types of reactions to the foreign protein. Human Insulin consists of two short polypeptide chains: chain A and chain B, that are linked us together by disulphide bridges. In mammals including humans, insulin is synthesised as a pro hormone which contains an extra stretch called the C-peptide. This C-peptide is not present in mature insulin and is removed during maturation into insulin.

In the given figure, form (A) and form (B) represent different forms of a proteinaceous hormone secreted by pancreas in mammals



- (i) What type of bonding is present between chains of this hormone?
- (ii) What is this form (A) and form (B)? How these forms differ from each other?
- (iii) Explain how was this hormone produced by Eli Lilly, an American company, using rDNA technology.

OR

Two children, A and B aged 4 and 5 years respectively visited a hospital with a similar genetic disorder. The girl A was provided enzyme-replacement therapy and was advised to revisit periodically for further treatment. The girl, B was, however, given a therapy that did not require revisit for further treatment.

- a) Name the ailments the two girls were suffering from.
- b) Why did the treatment provided to girl required repeated visits?
- c) How was the girl B cured permanently?

(5)

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