



ENTHUSIAST COURSE

BIOLOGY

Time Allowed : 2 Hours

Maximum Marks : 35

General Instructions:-

- Please check that this question paper contain 4 printed pages.
- Please check that this question paper contains 13 questions.
- Please write down the serial number of the question before attempting it.

Biology

Total Questions : 13 and Total Marks : 35

There is no overall choice in the question paper. However, internal choices are provided in 2 questions of 2 marks, 1 question of 3 marks, 1 question of 5 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.

Type of Que.	Section	No. of Questions	Q. Numbering	Marks/Questions	Total Marks
Short Answer Type Questions	A	6	1 to 6	2	12
Long Answer Type Questions	B	6	7 to 12	3	18
Case Study Based Question	C	1	13	5	5

HAVE CONTROL → HAVE PATIENCE → HAVE CONFIDENCE ⇒ 100% SUCCESS

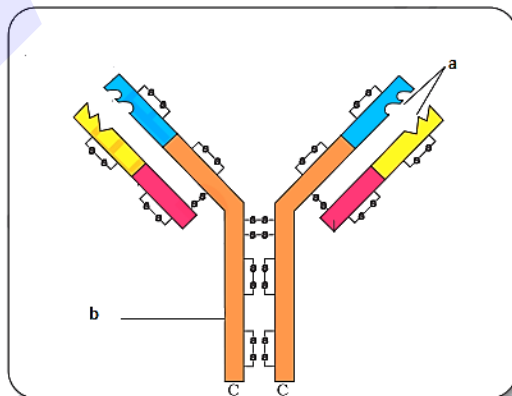
SECTION - A

- How is an allergic reaction caused by an allergen? Name a drug that can reduce the symptoms of allergy. [2 Marks]
- Why is 'starter' added to set the milk into curd ? Explain. [2 Marks]

OR

An organic farmer relies on natural predation for controlling plant pests and diseases. Justify giving reasons why this is considered to be holistic approach ? [2 Marks]

- The figure given below represents a molecule present in the body of a mammals. [2 Marks]



- What does the given diagram illustrate ?
- Name the parts labeled 'a' and 'b' in the molecule shown above.
- Name the type of cells that produce this molecule.

4. Write the name of the microbes from which cyclosporin A (an immuno-suppressive drug) and statins (blood cholesterol lowering agents) are obtained. [2 Marks]
5. What is mutualism? Mention any two examples where the organisms involved are commercially exploited in agriculture. [2 Marks]
6. The species diversity of plants (22 percent) is much less than that of animals (72 percent). What could be the explanations to how animals achieved greater diversification? [2 Marks]

OR

What are sacred groves? What is their role in conservation? [2 Marks]

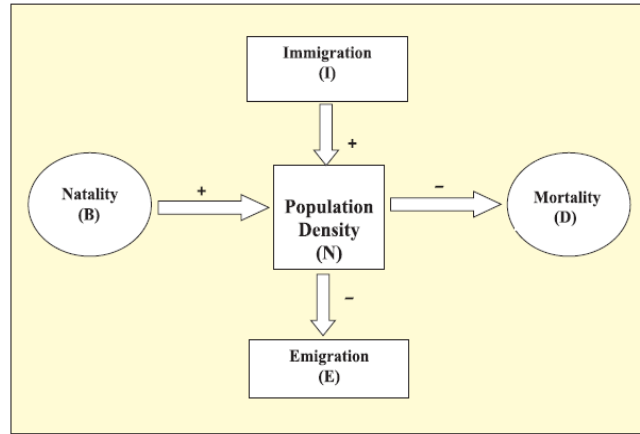
SECTION - B

7. On a visit to a Hill station, one of your friends suddenly became unwell and felt uneasy.
- (i) List two symptoms you would look for to term it to be due to allergy.
- (ii) Explain the response of the body to an allergy.
- (iii) Name two drugs that can be recommended for immediate relief. [3 Marks]

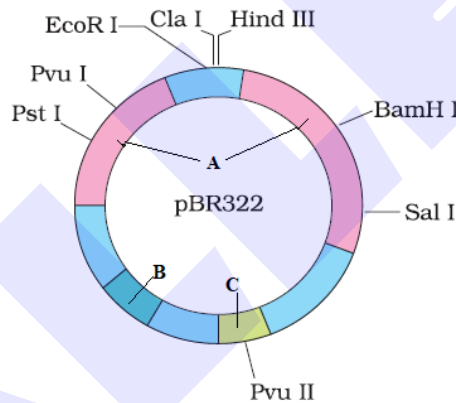
OR

A 17-year old boy is suffering from high fever with profuse sweating and chills. Choose the correct option from the following diseases which explains these symptoms and rule out the rest with adequate reasons. (a) Typhoid (b) Viral Fever (c) Malaria [3 Marks]

8. 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 littered around. [3 Marks]
- (a) Why is taking 'smack' considered an abuse?
- (b) Write the chemical name of 'smack' and the name of its source plant.
- (c) Syringes and needles used by the youth for taking the drug could prove to be vary fatal. Explain.
9. Give reasons why: [3 Marks]
- (a) DNA cannot pass into a host cell through the cell membrane.
- (b) Proteases are added during isolation of DNA for genetic engineering.
- (c) Single cloning site is preferred in a vector.
10. How is our quality of life affected if, say instead of 20,000 we have only 15,000 species of ants on earth? [3 Marks]
11. The given diagram below shows the basic processes which affects the population density, observe it and give the answer of questions that follow: [3 Marks]



- (a) Which factors increase the population density?
 - (b) If N is the population density at time t , then what would be its density at time $(t+1)$? Give the formula.
 - (c) In a rat house there were 60 rats 10 more rat enter the house and 12 out of the total rats were eaten by the cats. If 16 rats were born during the time period under consideration and 14 left the house. Find out the resultant population at time $(t+1)$.
12. Study the figure of vector pBR322 given below. Identify A, B and C and explain their roles in cloning a vector. **[3 Marks]**



SECTION - C

13. There was a 4 year old girl who suffered from a disease which related to immune system. An enzyme which is crucial for functioning of immune system do not synthesized. She was administrated to a therapy by which a defected gene have been replaced.
- Two girls, 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. **[5 Marks]**
- (a) Write the causes of such type of disorder.
 - (b) Name the ailments the two girls were suffering from.
 - (c) Why did the treatment provided to girl A required repeated visits?
 - (d) Why is the introduction of genetically engineered lymphocytes into this type of patient not a permanent cure? Suggest a possible permanent cure.

OR

The plasmid have some genes encoding resistance to antibiotics considered as selectable marker for *E.coli* cloning vector. There are two cloning site in vector pBR322 which helpful for selection of recombinant and elimination of non-recombinant. **[5 Marks]**

- (a) Why is it essential to have a 'selectable marker' in a cloning vector?
- (b) A gene N was introduced in *E.coli* cloning vector pBR322 at BamHI site. What will be its impact on the recombinant plasmid ? Give a possible way by which you could differentiate non- recombinant to recombinant plasmid.
- (c) Why dose the 'insertional inactivation' method to detect recombinant DNA is preferred to 'antibiotic resistance' procedure?
- (d) How does β - galactosidase coding sequence act as a selectable marker? Explain.