

PRE-BOARD EXAMINATION TERM II (2021-22)
CLASS XII
BIOLOGY (044)

Max. Marks 35

Time allowed: 2 hours

General Instructions:

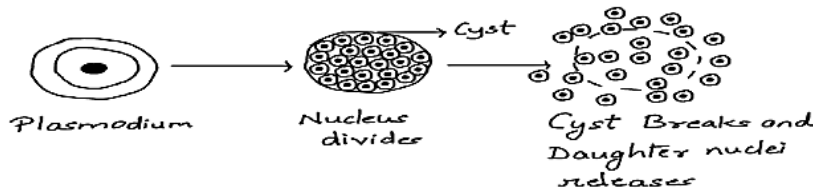
- i) All questions are compulsory.
- ii) The question paper has three sections and 13 questions. All questions are compulsory.
- iii) Section–A has 6 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has a case-based question of 5 marks.
- iv) There is no overall choice. 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.

QNO SECTION-A MARKS

1. A child gets colostrum and polio drop both as an infant .Compare their mode of action with respect to our immune system. 2

OR

Which type of mode of reproduction is visible in the following figure also mention in which host of Plasmodium does this process take place?



2. Identify the plant and name the drug obtained from this plant. 2



3. You are advised to improve the nitrogen content of the soil for the cultivation of a non-leguminous terrestrial crop. 2

- (i) Recommend two microbes that can enrich the soil with nitrogen.
- (ii) Why do leguminous crops not require such enrichment of the soil?

4. How do kangaroo rat in North American deserts is capable of meeting all its water requirements? 2

OR

In accordance with their life styles, which special adaptations parasites evolved?

5. (a) Explain the concept of endemism. 2

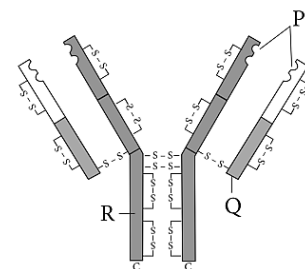
- (b) Name four regions in an around our country that are considered hotspots.

6. What is cyclosporin A? What is its importance? 2

SECTION-B

7. Identify P, Q and R in the schematic diagram of an antibody given above and answer the questions. 3

- (a) Write the chemical nature of an antibody.
- (b) Name the cells that produce antibodies in humans.



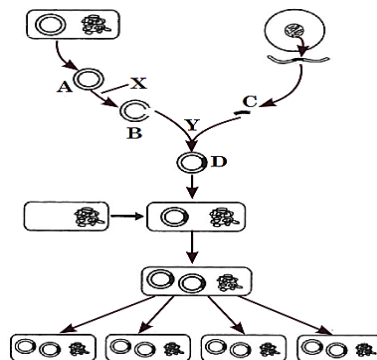
8. (a) What happens to a normal cell in a body when oncogenes get activated under certain conditions? 3

- (b) Which techniques are useful to detect cancer of internal organs?
- (c) Why are cancer patients often given alpha interferon during their treatment?

9. Refer to the given figure and answer the following questions.

3

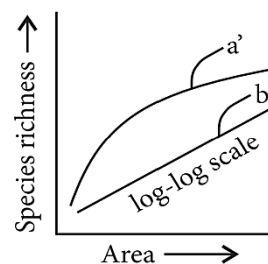
- Name the process shown in the given figure.
- Identify A to D in the given figure.
- Name the processes X and Y. Also mention the enzymes involved in both steps.



OR

A selectable marker is used in the selection of recombinants on the basis of their ability to produce colour in presence of chromogenic substrate.

- Mention the name of mechanism involved.
 - Which enzyme is involved in production of colour?
 - How is it advantageous over using antibiotic resistant gene as a selectable marker?
10. (a) Why do the toxic insecticidal proteins secreted by *Bacillus thuringiensis* kill the insect and not the bacteria itself? 3
- (b) Name the specific type of gene that is incorporated in a cotton plant to protect the plant against cotton boll worm infestation.
11. Some organisms possess adaptations that are physiological which allow them to respond quickly to a stressful situation. 3
- What is Altitude sickness?
 - How do people get acclimatised to it?
12. The following graph shows the species-area relationship. Answer the following question as directed. 3
- Name the naturalist who studied the kind of relationship shown in the graph. Write the observation made by him.
 - Write the situation as discovered by the ecologists when the value of 'Z' (slope of the line) lies between :
 - 0.1 and 0.2
 - 0.6 and 1.2
 - What does 'Z' stand for?
 - When would the slope of the line 'b' become steep.



SECTION-C

13. The first restriction endonuclease—Hind II, whose functioning depended on a specific DNA nucleotide sequence was isolated and characterised five years later. It was found that Hind II always cut DNA molecules at a particular point by recognising a specific sequence of six base pairs. This specific base sequence is known as the recognition sequence for Hind II. Besides Hind II, today we know more than 900 restriction enzymes that have been isolated from over 230 strains of bacteria each of which recognise different recognition sequences. 5
- What are Restriction enzyme?
 - Why do bacteria have these restriction enzymes?
 - Show diagrammatically a restriction enzyme its recognition & the product it produces?

OR

Management of adult-onset diabetes is possible by taking insulin at regular time intervals. What would a diabetic patient do if enough human-insulin was not available? If you discuss this, you would soon realise that one would have to isolate and use insulin from other animals. Would the insulin isolated from other animals be just as effective as that secreted by the human body itself and would it not elicit an immune response in the human body? Now, imagine if bacterium were available that could make human insulin. Suddenly the whole process becomes so simple. You can easily grow a large quantity of the bacteria and make as much insulin as you need.

- Name the source from which insulin was extracted earlier. Why is this insulin no more in use by diabetic people?
- How did Eli Lilly synthesize the human insulin? Mention one difference between this insulin and the one produced by the human pancreas.