

**Sample Question Paper  
Class XII (2014-15)  
Biology (044)**

**Time allowed: 3hrs**

**Maximum Marks: 70**

**General Instructions:**

1. There are a total of 26 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question number 1 to 5, Very Short Answer type questions of one mark each.
3. Section B contains question number 6 to 10, Short Answer type I questions of two marks each.
4. Section C contains question number 11 to 22, Short Answer type II questions of three marks each.
5. Section D contains question number 23, Value Based Question of four marks.
6. Section E contains question number 24 to 26, Long Answer type questions of five marks each.
7. 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. A tissue culture experiment has been performed with a plant tissue infected with TMV. Meristematic tissue produces healthy plant. Reason out the possibility of obtaining such result. 1
2. State a method of cellular defence which works in all eukaryotic organisms. 1
3. In case of an infertile couple, the male partner can inseminate normally but the mobility of sperms is below 40 percent. Judge, which kind of ART is suited in this situation to form an embryo in the laboratory, without involving a donor? 1
4. Calculate the length of the DNA of bacteriophage lambda that has 48502 base pairs. 1
5. If two genes are located far apart from each other on a chromosome, how the frequency of recombination will get affected? 1

## Section - B

6. The alarming population growth is leading to scarcity of basic requirements. Enumerate and justify any two population control measures to overcome this problem. **2**
7. Both Down's syndrome and Turner's syndrome are examples of chromosomal disorders. Cite the differences between the two. **2**
8. Demand for mushroom as food has led to its culturing on a large scale. Similarly, it is perceived that microbes too would become acceptable as food. Identify a microbe which can be cultured as a food source and give the applicability of its culture in the given context. **2**

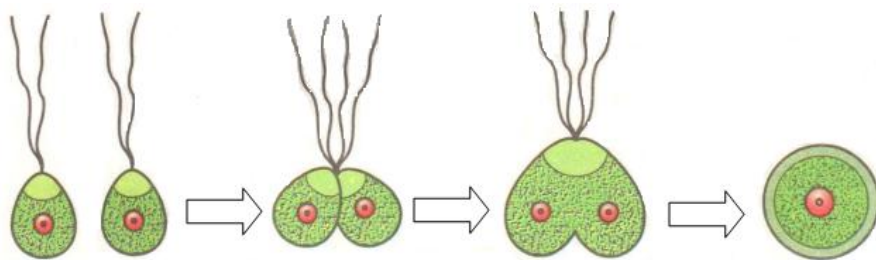
OR

Success rate of artificial insemination in cattle is fairly low. Identify any other mean to improve the successful production of hybrids. State the advantages of this technique. **2**

9. a) Patients who have undergone myocardial infarction are given clot buster. Mention the clot buster administered and its microbial source. **1+1**
- b) A person recuperating from illness is advised to have curd regularly. Why? **1+1**
10. Interpret two effects of loss of biodiversity in a region. **2**

## Section - C

11. Draw and label the enlarged view of microsporangium. State the function of its innermost layer. **3**
- 12.



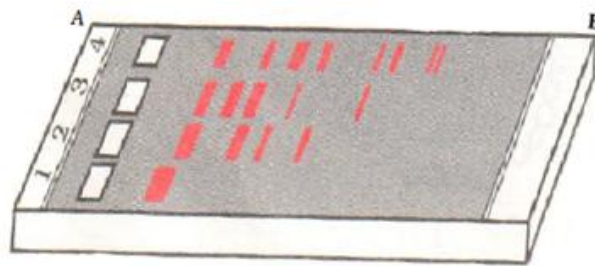
- a) State the type of gametes shown in the diagram. **1+1+1**
- b) Identify the process taking place and the resultant structure.
- c) Name an organism that reproduces in this manner. **1+1+1**
13. Diagrammatically represent the experimental set up that proves Oparin - Haldane hypothesis. **3**

14. A cross is made between different homozygous pea plants for contrasting flower positions.
- Find out the position of flowers in  $F_1$  generation on the basis of genotypes.
  - Work out the cross upto  $F_2$  generation.
  - Compute the relative fraction of various genotypes in the  $F_2$  generation? **1+1+1**
15. Refer to the figure given below and answer the questions that follow:



- Recognize and explain the process by which Tasmanian wolf evolved.
  - Give one example of an animal that has evolved along with Tasmanian wolf.
  - Compare and contrast the two animals shown? **1+1+1**
16. Your classmate complains of headache and cough to the doctor. The doctor confirms that he is suffering from Pneumonia and not just common cold. How the doctor must have reached to such conclusion? Mention any two precautions to be followed to prevent the spread of this disease. **3**
17. Cow dung and water is mixed and the slurry is fed into the biogas plant for digestion by microbes. The person performing the process shares that there is no need to provide inoculum for it, why? What is the role of microbes at the source? Under which condition will they be most active and effective? **3**
18. A person is born with a hereditary disease, suggest the possible corrective method for it. Illustrate by giving a specific example. **3**
19. A doctor prescribed morphine as a sedative and pain killer to your cousin who has undergone surgery. Even after recovery he continued to consume the prescribed medicine. What do you conclude about his condition? After appraising yourself, what measures will you suggest to him to control this problem? Briefly explain any two. **3**

20.



a) Mark the positive and negative terminals.

b) What is the charge carried by DNA molecule and how does it help in its separation?

c) How the separated DNA fragments are finally isolated?

**1+1+1**

**OR**

*CryIAb* is introduced in a plant to control infestation by corn borer.

a) Name the resultant plant after successful insertion of the gene desired.

b) Summarize the action of the gene introduced.

**½ + 2½**

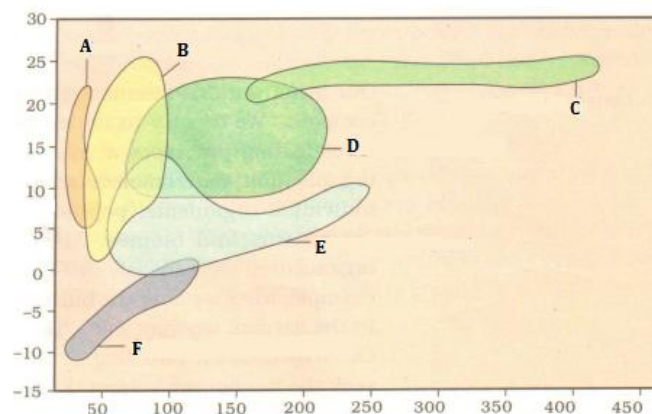
21. a) In pBR322, foreign DNA has to be introduced in tet<sup>R</sup> region. From the restriction enzymes given below, which one should be used and why:

PvuI, EcoRI, BamHI

b) Give reasons, why the other two enzymes cannot be used.

**2+1**

22. The graph given below shows the distribution of biomes:



a) What do the 'X' and 'Y' axes represent?

b) Mark 'grassland' and 'coniferous forest' biomes.

c) Why is 'F' located at the given position in the graph?

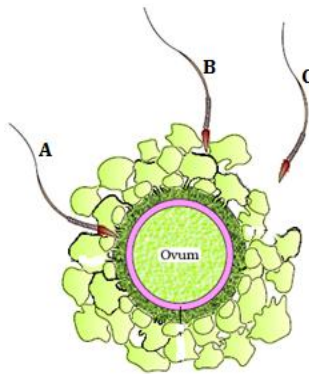
**1+1+1**

## Section - D

23. A son persuades his father to replace his old mobile phone with the latest model launched in the market. He also shares the latest features it has and explains how it can be of a help to him in the modern technological world. Father is reluctant in buying a new one and tries to explain about its environmental impact. How do you think, the biologist father has tried to convince his son? Justify the arguments of father and son both, by mentioning positive aspects of the behavior displayed by both of them in the situation concerned (three each). 4

## Section - E

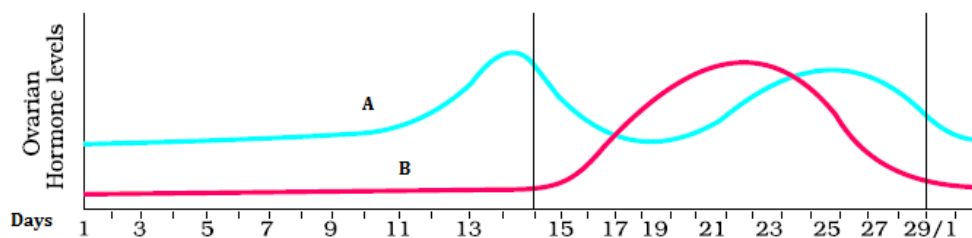
24.



- Compare the fate of sperms shown in the diagram.
- What is the role of zona pellucida in this process?
- Analyze the changes occurring in the ovum during the process.
- Mention what helps in the entry of sperm into the ovum.
- Specify the region of female reproductive system where the event represented in the diagram takes place. 1+1+1+1+1

OR

The graph given below shows the variation in the levels of ovarian hormones during various phases of menstrual cycle:



- a) Identify 'A' and 'B'.
- b) Specify the source of the hormone marked in the diagram.
- c) Reason out why A peaks before B.
- d) Compare the role of A and B.
- e) Under which condition will the level of B continue to remain high on the 28<sup>th</sup> day?

**1+1+1+1+1**

- 25.** Explain the process of protein synthesis from processed m-RNA. **5**

**OR**

Which methodology is used while sequencing the total DNA from a cell? Explain it in detail. **5**

- 26.** Citing lake as an example of a simple aquatic ecosystem, interpret how various functions of this ecosystem are carried out. Make a food chain that is functional in this ecosystem. **5**

**OR**

a) Colonization of a rocky terrain is a natural process. Mention the group of organisms which invade this area first. Give an example.

b) Over the years, it has been observed that some of the lakes are disappearing due to urbanization. In absence of human interference, depict by making a flow chart, how do the successional series progress from hydric to mesic condition.

- c) Identify the climax community of hydrarch and xerarch succession. **1+3½+ ½**

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