

Roll Number		
-------------	--	--

Code Number 44/3/3



INDIAN SCHOOL MUSCAT THIRD PRELIMINARY EXAMINATION BIOLOGY

CLASS: XII

Sub. Code: 044

Time Allotted: 3 Hrs

12.02.2018

Max. Marks: 70

General Instructions:

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. Identify the two correct statements from the following 1
 - (i) Apiculture means apical meristem culture.
 - (ii) Spinach is iron –enriched.
 - (iii) Green revolution has resulted in improved pulse-yields
 - (iv) Aphids cannot infest rapeseed mustard.
2. Mention the role of Restriction Enzymes in Recombinant DNA technology. 1
3. After a brief medical examination a healthy couple came to know that both of them are unable to produce functional gametes and should look for an ‘ART’ (Assisted Reproductive Technique). Name the ‘ART’ that you can suggest to them to help them bear a child. 1
4. What is Biopiracy? 1
5. How many kinds of phenotypes would you expect in F₂ generation in a monohybrid cross exhibiting co-dominance? 1

SECTION B

6. Explain the events that occur during fertilization of an ovum in humans. How is it that only one sperm enters the ovum? 2

7. Why is the possibility of human female suffering from hemophilia rare? Explain. 2
8. What is the pathogenic property of baculovirus, used as biological agents? Name the genus of these organisms. 2

OR

Mycorrhizal association exists between fungi (Glomus sp) and roots of higher plants. How is this association beneficial to each member?

9. a) Why is small amount of curd added to milk? 2
- b) What is the difference between fermentation of dough for making dosa and bread?
10. "Niche is a part of a habitat." Explain with the help of an example. 2

SECTION C

11. (a) Draw a diagram of Pistil showing pollen tube growth in angiosperm and label (i) Stigma; (ii) male gametes; (iii) micropyle and (iv) Ovule. 3
 (b) Write the function of micropyle.
12. Differentiate between 3
 (a) Xenogeny and Geitonogamy
 (b) Oviparous and Viviparous organisms
 (c) Pathogenesis and Parthenocarpy
13. According to the Darwinian theory, the rate of appearance of new forms is linked to their life cycles. 3
 Explain.
14. "DNA replication is semi-conservative". Name the scientists who proposed it and who proved it. How 3 was it proved experimentally? Explain.
15. "A population has been exhibiting genetic equilibrium". 3
 Answer the following with regard to the above statement.
 (i) Explain the above statement.
 (ii) Name the underlying principle.
 (iii) List any two factors which would upset the genetic equilibrium of the population.
 (iv) Take up any one such factor and explain how the gene pool will change due to that factor
16. (a) Name the causative organisms for the following diseases: 3
 (i) Elephantiasis (ii) Ringworm (iii) Amoebiasis
 (b) How can public hygiene help control such diseases?
17. Microbes play a dual role when used for sewage treatment as they not only help to retrieve usable 3

water but also generate fuel. Write in points how this happens?

18. What was the challenge for production of insulin using rDNA techniques? How did Eli Lilly produce insulin using rDNA technology? 3
19. (a) What is an “allergic reaction”? 3
(b) Name any two drugs used to quickly reduce the symptoms of allergy.
(c) Why do more and more children in metro cities of India suffer from allergies and asthma?
20. What are ‘cloning sites’ in a cloning vector? Explain their role. Name any two such sites in pBR322. 3

OR

Name the host plant and that Meloidogyne incognita infects. Explain the role of Agrobacterium in the production of ds-RNA in the host plant.

21. Why do lepidopterans die when they feed on Bt cotton plant? Explain how it happens. 3
22. Explain with the help of two examples how certain plants have evolved morphological and chemical defenses against primary consumers such as cows and goats. 3

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 would try 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).

SECTION E

24. (a) What are the benefits of choosing a dioecious plant species for plant breeding experiments? 5
(b) How would you proceed to cross-pollinate a monoecious flower?
(c) Draw a labelled schematic diagram of T.S. of an anther of an angiosperm.

OR

- (a) Explain the hormonal regulation of spermatogenesis in humans.
(b) Draw the diagram of a human sperm. Label and write the functions of the components of its head.
25. State and explain the “law of independent assortment” in a typical Mendelian dihybrid cross. 5

OR

(a) How are the observations made during moth collection in pre- and post-industrialized era in England support evolution by Natural Selection?

(b) Explain the phenomenon that is well represented by Darwin's finches other than natural selection.

26. (a) Draw a simplified model of phosphorus cycling in a terrestrial ecosystem.

5

(b) Write the importance of such cycles in ecosystems.

OR

(a) Explain the narrowly utilitarian, broadly utilitarian and ethical arguments in favor of conservation of biodiversity.

(b) How is designation of certain areas as hotspots a step towards biodiversity conservation? Name any two hotspots in India.

End of the Question Paper