Roll Number		

Code Number 044/3/1

INDIAN SCHOOL MUSCAT
THIRD PRELIMINARY EXAMINATION
BIOLOGY

CLASS: XII Sub. Code: 044 Time Allotted: 3 Hrs

12.02.2018 Max. Marks: 70

General Instructions:

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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. Write the importance of MOET. 1

2. Why is the enzyme cellulose needed for isolating genetic material from plant cells and not from the animal cells? 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. When does a geneticist need to carry a test cross? 1

SECTION B

6. What is amniocentesis? Justify the statutory ban on it. 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 a biological agent? 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 Evaluate the effect of loss of biodiversity in a region. Mention any four such effects. 2

SECTION C

11. Draw a schematic labelled diagram of a fertilized embryo sac of an Angiosperm. State the fate of cells found at the chalazal end of embryosac. 3

12. Give reason : - 3

(a) A liverwort plant is unable to complete its life cycle in a dry environment.

(b) Number of male gametes produced is much more than the female gametes produced.

(c) Organisms exhibiting external fertilization show great synchrony between the sexes and release a large number of gametes into surrounding medium.

13. How is Darwin's theory of natural selection different from Hugo deVries theory of mutation? Explain 3

14. A true breeding tall plant is crossed with a true breeding dwarf plant. F1 progeny is 100% tall and F2 has tall : dwarf in the ratio 3:1 (i) Explain why F1 shows only one type of parental phenotype; (ii) Name the patterns of inheritance in which the ratio deviates from above. Also mention the deviated phenotypic ratio. 3

15. "A population has been exhibithing genetic equilibrium". 3 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. Your classmate complains of headache and cough. On the basis of certain symptoms, the doctor confirms that he is suffering from Pneumonia and not common cold. List these symptoms. Mention any two precautions to be followed to prevent the spread of this disease. 3

17. Microbes play a dual role when used for sewage treatment as they not only help to retrieve usable water but also generate fuel. Write in points how this happens? 3

18. Explain with reference to PCR 3

(a) A specific enzyme helps in amplication in PCR. Name the bacterium from which it is isolated and state how its thermostable nature is helpful.

(b) Explain its use in molecular diagnosis.

19. A doctor prescribed morphine as a sedative and pain killer to your cousin who had undergone a surgery. Even after recovery, he indiscriminately took the medicines and later craved for the same. What do you conclude about his condition? What measures will you suggest to him to overcome this problem? Briefly explain any two. 3

20. Explain the role(s) of the following in Biotechnology : 3

(a) Restriction endonuclease

(b) Gel - electrophoresis

(c) Selectable markers in pBR322.

OR

Write the steps you would suggest to be undertaken to obtain a foreign-gene-product.

21. Why do lepidopterans die when they feed on Bt cotton plant? Explain how it happens. 3

22. (a) "Organisms may be conformers or regulators." Explain this statement and give one example of each. 3

(b) Why are there more conformers than regulators in the animal world?

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) What is an age-pyramid? 5

(b) Name three representative kinds of age-pyramids for human population and list the characteristics for each one of them.

OR

Discuss the role of healthy ecosystem services as a pre-requisite for a wide range of economic, environmental and aesthetic goods and services.

End of the Question Paper