



INDIAN SCHOOL MUSCAT FIRST PRELIMINARY EXAMINATION 2017

BIOLOGY

CLASS: XII

Sub. Code: 044

Time Allotted: 3 Hrs

17.12.2017

Max. Marks: 70

General Instructions:

- (i) There are a total of **26** questions and **five** sections in the question paper. **All** questions are compulsory.
- (ii) Section **A** contains questions number **1** to **5**, Very Short Answer type questions of **one** mark each.
- (iii) Section **B** contains questions number **6** to **10**, Short Answer type-**I** questions of **two** marks each.
- (iv) Section **C** contains questions number **11** to **22**, Short Answer type-**II** questions of **three** marks each.
- (v) Section **D** contains question number **23**, Value Based Question of **four** marks.
- (vi) Section **E** contains questions number **24** to **26**, Long Answer type questions of **five** marks each.
- (vii) 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. The turkey usually produces females for several generations. How is this possible? 1
2. Name the microbes that help production of Statin. 1
3. In plants, how is alien DNA introduced into the host cell? 1
4. Expand the following (i) PCR (ii) Bt 1
5. When is the structure and composition of a community expected to remain unchanged? 1

SECTION B

6. Mention one application for each of the following : 2
- (a) Passive immunization
 - (b) Antihistamine
 - (c) Colostrum
 - (d) Cytokinin-barrier
7. South and North Indian sugar cane varieties differ in certain features. Scientists 2
have researched to produce a better variety. Specify the desirable characters a
farmer looks for in his sugarcane crop.

OR

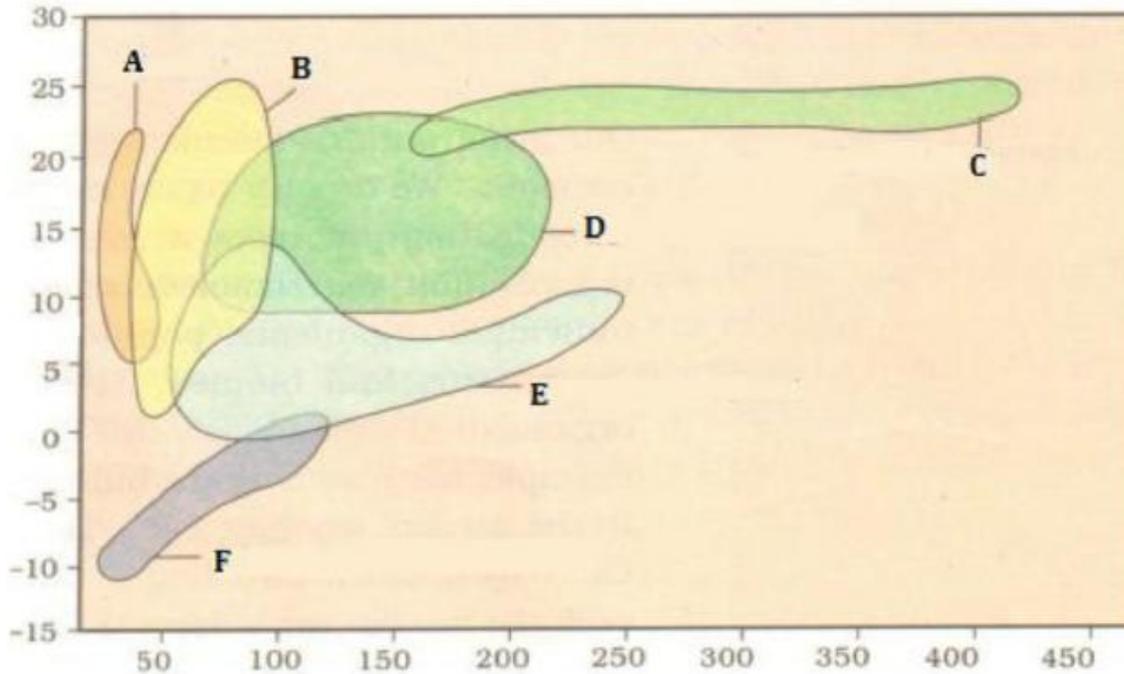
Honey collection improves when beehives are kept in crop-fields during flowering season. Explain.

8. Manipulation of DNA in an organism requires many tools such as restriction 2
enzymes, ligases, vectors and host. Specify the use of restriction endonuclease in
the formation of recombinant DNA.
9. Plants, bacteria, fungi and animals whose genomes have been altered by 2
manipulation are called Genetically Modified Organisms. How Genetic
modification has benefitted these plants?
10. Loss of Biodiversity will lead to ecological instability. Write any four causes of 2
biodiversity loss.

SECTION C

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

3



- (a) What do the 'X' and 'Y' axis represent?
- (b) Identify the 'grassland' and 'coniferous forest' biomes, from the above figure.
- (c) Why is 'F' located at the given position in the graph?
12. For any ecosystem constant input of solar energy is necessary for their sustenance. 3
Describe the inter-relationship between productivity, gross primary productivity and net productivity.
13. The diversity of plants and animals is not uniform throughout the world but shows 3
a rather uneven distribution. The largely tropical Amazonian rain forest in South America has the greatest biodiversity than temperate or polar areas. What is so special about tropics that might account for their greater biological diversity?

14. a) An electrostatic precipitator in a thermal power plant is not able to generate high voltage of several thousands. Write the ecological implication because of it. 3
- b) List four benefits to human life by eliminating the use of CFCs.
15. The World Health Organization reports that an estimated 177 million people worldwide have diabetes. With a speed no longer seen in drug discovery and development, insulin was isolated for the first time in 1921 from animal sources and commercialized within 12 months. Decades later, it took just four years for developers to move from expressing recombinant insulin in bacteria to launching the world's first biotechnology drug product. Explain the various steps involved in the production of artificial insulin. 3

OR

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

- (a) What is the resultant plant referred as?
- (b) Summarize the action of the gene introduced
16. Name and explain the technique that helps in the separation of DNA fragments for DNA recombinant technology experiments. How can these separated DNA fragments be visualised? 3
17. Doctors observed that a child is down with illness frequently. After several molecular diagnoses, they found that the child is suffering from lack of an enzyme which is essential for normal functioning of immune system. Name the enzyme and Why this enzyme is deficient in the body? Describe How it can be treated. 3
18. Describe how do 'flocs' and 'activated sludge' help in Sewage Treatment. 3

19. (a) What is green revolution? Mention the steps that led to it. 3

(b) Name the scientist whose contribution led to development of semi-dwarf wheat varieties in India.

20. a) In the table given below, select and enter one correct device out of the following Oral pill, condom, Copper T, Saheli, Vasectomy, Diaphragm, Tubectomy, Cervical cap 3

Method of birth control	Device
Barrier	
IUD	
Surgical Technique	
Administering Hormones	

b) How implants are better than pills?

21. Draw a labelled diagrammatic sectional view of a human seminiferous tubule. 3

22. Explain the process of pollination in Vallisneria. How is it different in water-lily, which is also an aquatic plant? 3

SECTION D

23. During a visit to a government office with his father, young Pratap saw dirty spittoons in every corner of the building. Some people were spitting paan and gutka through the window grills. As soon as he objected to their action, Pratap was scolded by some persons and the quarrel between the two parties became a matter 4

of concern. The very next week Pratap was amazed to see the walls cleaned, no spittoons and a notification hung to maintain cleanliness and hygiene inside the office. The officer appreciated Pratap.

- a) What values are promoted through the incident?
- b) Which diseases are transmitted through droplets and air?
- c) How does chewing paan or gutka cause health hazard?

SECTION E

24. (a) Draw a longitudinal sectional view of a typical anatropous ovule to show the site where double-fertilization takes place. Label any four major parts of the ovule. 5
- (b) How do the male gametes that are present in the pollen grains reach the site mentioned by you in part (a) to cause double fertilization?

OR

- (a) When and where does spermatogenesis in a human male begin to take place?
- (b) With the help of schematic labelled diagrams trace the development of mature spermatozoa in a human male.
- (c) Describe the structure of a human sperm.
25. (a) What precaution(s) would you recommend to a patient requiring repeated blood transfusion? 5
- (b) If the advice is not followed by the patient, there is an apprehension that the patient might contract a disease that would destroy the immune system of his/her body. Explain with the help of schematic diagram only how the immune system would get affected and destroyed.

(c) Name the type of immunity the colostrum provides to a newborn baby. Write giving an example where this type of immunity should be provided to a person.

OR

Microbes Play a vital role in our day to day life. Explain how the following microorganisms are useful to us.

- a) *Streptococcus*
- b) *Trichoderma polysporum*
- c) *Monascus purpureus*
- d) Baculoviruses
- e) *Azospirillum*

26. Taking the example of a lake as 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 seres progress from hydric to mesic condition.
 - a) Identify the climax community of hydrarch and xerarch succession.

End of the Question Paper