



INDIAN SCHOOL MUSCAT HALF YEARLY EXAMINATION BIOLOGY

CLASS: XII

Sub. Code: 044

Time Allotted: 3 Hrs

26.09.2019

Max. Marks: 70

General Instructions:

- (i) *There are total 27 questions and four sections in the question paper. All questions are compulsory.*
- (ii) *Section A contains questions 1 to 5, very short answer type questions of one mark each.*
- (iii) *Section B contains questions 6 to 12, short answer type-I questions of two marks each.*
- (iv) *Section C contains questions 13 to 24, short answer type-II questions of three marks each.*
- (v) *Section D contains question 25 to 27, long answer type questions of five marks each.*
- (vi) *There is no overall choice in the question paper, however, an internal choice is provided in two questions of one mark, two questions of two marks, four questions of three marks and all the three questions of five marks. In these questions, an examinee is to attempt any one of the two given alternatives.*
- (vii) *Wherever necessary, the diagram drawn should be neat and properly labelled.*

SECTION - A

- 1 Sperms have enzymes in their acrosome. Support this statement by giving suitable reason. 1
- 2 Some species colonise an area and their populations become more numerous, whereas populations of other species decline and even disappear. Evaluate the statement. 1
- 3 Population of India which was approximately 350 million at the time of our independence reached close to the billion mark by 2000 and crossed 1 billion in May 2000. Suggest any two possible reasons for this explosion. 1

- 4 Identify the vegetative propagule of Eichornia. 1

OR

List the steps involved in artificial hybridization.

- 5 Give the technical term for the type of pollination which ensures genetic recombination. 1

OR

Identify the cells present in the seminiferous tubules that provide nutrition to the sperms.

SECTION - B

- 6 Who verified the 'Chromosomal theory of inheritance' by experiments? What was his experimental organism? Give two reasons for choosing the same. 2
- 7 What would happen if bacteriophage grown in radioactive sulphur or radioactive phosphorus are allowed to infect the bacteria? 2

- 8 Infer the characteristics of a stable community. (any two points) 2
- 9 a) How many eggs do you think were released by the ovary of a female dog which gave birth to 6 puppies? 2
b) How many eggs had been released if a mother gave birth to identical or monozygotic twins?
- 10 Draw a labeled diagram of a mature ovule of an angiosperm. 2
OR
Draw a labeled diagram of sectional view of a seminiferous tubule. (Enlarged)
- 11 Colombia located near the equator has nearly 1,400 species of birds while New York at 41° N has 105 species and Greenland at 71° N only 56 species. India, with much of its land area in the tropical latitudes, has more than 1,200 species of birds. Explain by giving two reasons. 2
OR
a) Logistic growth is realistic. Give reason.
b) What does 'r' indicate in a population equation?
- 12

p	i	P	O	z	y	a
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 2
(a) If the repressor fails to attach to the said site, what products will be formed by z, y and a?
(b) Under which condition repressor is unable to attach at this site?

SECTION - C

- 13 List any three morphological or chemical defences against herbivores. 3
OR
List any three examples of commensalism.
- 14 Explain convergent and divergent evolution with help of one example of each. 3
OR
What do the forelimbs of whales, bats and cheetah with respect to evolution signify? Provide one such example in plants. Define adaptive radiation.
- 15 a) Arrange the following terms in the correct developmental sequence. 3
Pollen grain, sporogenous tissue, microspore tetrad, pollen mother cell, male gametes.
b) How many male gametes will be produced in a single angiosperm pollengrain?
- 16 What would happen if biodiversity loss happens in an area? 3
OR
In a food chain consisting of grass, frog, hawk, snakes, grasshopper and insects, where will be the concentration of harmful chemicals be maximum? What is the effect of DDT magnification on bird population and why?
- 17 a) State the rule that depicts the adaptation of animals to live in a particular habit. 3
b) Draw and discuss the expanding and declining age pyramids.
- 18 In a mixed population, those that can better adapt, survive and increase in population size, no variant is completely wiped out. Illustrate this statement with the help of an example. 3
- 19 a) If there were 30 fowls in a poultry farm, 10 more fowls were brought in and 5 of them died. If 8 new chicks were hatched during the time period under consideration and 6 fowls were removed, find out the resultant number of fowls. 3

- b) If a new habitat is just being colonized, out of the four factors affecting population growth which factor contributes the most?
- 20 How would you apply your knowledge about the working of catalytic converter to justify its role in reducing the air pollution in Delhi? Unleaded petrol should be used for vehicles with catalytic converter. Give reason. 3
- 21 Explain what is happening in the ovary of a female during the follicular phase; ovulatory phase and leuteal phase of menstrual cycle. 3
- 22 Explain endosperm formation during the post fertilization events. 3
- OR**
- Explain the placenta formation in human beings.
- 23 A normal visioned woman whose father is colour blind, marries a normal visioned man. What would be the probability of her (a) sons (b) daughters to be colour blind? Give reason and show the cross. 3
- 24 A flower of Brinjal plant following the process of sexual reproduction produces 360 viable seeds. Answer the following questions giving reasons. 3
- How many ovules are minimally involved?
 - How many megaspore mother cells are involved?
 - How many male gametes are involved in the above case?

SECTION - D

- 25 a) What is an ecological pyramid? Compare the pyramids of energy, biomass and numbers. 5
b) Write any two limitations of ecological pyramids.
- OR**
- a) Explain any three remedial measures to overcome acute air pollution in our cities.
- Write three ways in which noise pollution affects human beings. Suggest one measure to reduce noise pollution.
- 26 a) Explain two ways in which apomictic seeds can be produced. 5
b) List one advantage and one disadvantage of apomictic crop.
c) Why do farmers find production of hybrid seeds costly?
- OR**
- a) Explain one application of each of the following:
(i) Amniocentesis
(ii) Lactational amenorrhoea
(iii) ZIFT
b) Express the process of pollination in Vallisneria.
- 27 Differentiate between incomplete dominance and codominance. Substantiate your answer with one example of each. 5
- OR**
- a) Write the contribution of the following scientists in deciphering the genetic code.
George Gamow, Hargobind Khorana, Marshall Nirenberg, Severo Ochoa
b) State the importance of genetic code in protein biosynthesis.

End of the Question Paper