Roll Number		

SET A

INDIAN SCHOOL MUSCAT
SECOND PRE-BOARD EXAMINATION
BIOLOGY

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

12.02.2020 | Max. Marks: 70

General Instructions:

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question numbers 1 to 5, multiple choice questions of one mark each.
   Section B contains question numbers 6 to 12, short answer type I questions of two marks each.
   Section C contains question numbers 13 to 21, short answer type II questions of three marks each.
   Section D contains question number 22 to 24, case-based short answer type questions of three marks each.
   Section E contains question numbers 25 to 27, long answer type questions of five marks each.
3. There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of two marks, two questions 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.
4. Make your Handwriting legible

SECTION – A

1. Depletion of which gas in the atmosphere can lead to an increased incidence of skin cancer? 1

   a) Ammonia b) Methane c) Nitrous oxide d) Ozone

2. In which technique Ethidium Bromide is used? 1

   a) Southern Blotting techniques b) Western Blotting techniques

   c) Polymerase Chain Reaction d) Agarose Gel Electrophoresis

OR

Which one of the following will be a biopesticide?

a) Bt Cotton b) methanogen c) Spirulina d) Rosie Cow

3. The technique ELISA is based on the principle of 1

a) memory of cells b) detecting antigen c) detecting antibodies d) antigen-antibody interaction

4. The statuary ban on Amniocentesis in India will 1

a) promote study of genetic disorders at embryo level

b) demotivate to learn about the sex of a baby

c) discourage female infanticide

d) encourage couples to have healthy baby

5. Mule is the perfect example of 1

a) out crossing b) inbreeding c) interspecific hybridization d) Cross breeding

OR

The increase in the production of sea food is known as

a) Green revolution b) Yellow revolution c) Blue revolution d) White revolution

SECTION B

6. Compare primary productivity and secondary productivity. 2

7. Name the pioneer species on a bare rock. How do they help in establishing the next type of vegetation? 2

OR

Explain 'resource partitioning' taking warbler bird as an example.

8. Explain the contribution of Thermus aquaticus in the amplification of a gene of interest. 2

9. During the secondary treatment of the primary effluent how does the significant decrease in BOD occur? 2

10. Name the enzyme involved and provide a scientific term for the following processes in genetics: 2

a) formation of DNA strand from the DNA template strand.

b) Synthesis of RNA strand from the DNA strand.

11. Explain linkage and recombination as put forth by T.H. Morgan based on his observations with Drosophila melanogaster crossing experiment. 2

12. Mosses and frogs both need water as a medium for fertilization. Where does syngamy occur and how is it ensured in both these organisms? 2

SECTION C

13. Name the embryonic stage that gets implanted in human females. Explain the process of implantation. 3

14. (i) Name a human genetic disorder due to the following: 3

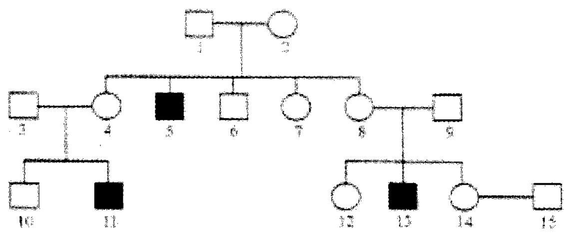
(a) An additional X-chromosome in a male

(b) Deletion of one X-chromosome in a female

(ii) State what aneuploidy leads to.

OR

Haemophilia is a sex linked recessive disorder of humans. The pedigree chart given below shows the inheritance of haemophilia in one family. Study the pattern of inheritance and answer the questions given.



a) Give all the possible genotypes of the members 4, 5 and 6 in the pedigree chart.

b) 'A blood test shows that the individual 14 is a carrier of haemophilia. The member numbered 15 has recently married the member numbered 14. What is the probability that their first child will be a haemophilic male?

15. If a true breeding homonzygous pea plant with green pod and axial flower as dominant characters is crossed with a recessive homonzygous pea plant with yellow seeds and terminal flowers, then what would be the: 3

(a) genotypes of the two parents;

(b) phenotype and genotype of the F1 offspring;

(c) phenotypic distribution ratio in F2 population?

16. According to Darwinian theory of natural selection the rate of appearance of new forms is linked to the life-cycle or the life-span of an organism. Explain with the help of an example. 3

17. (i) Name any two physiological barriers that provide innate immunity? 3

(ii) (a) Name the causative agents of pneumonia and common cold.

(b) How do these differ in their symptoms?

(c) Mention two symptoms common to both.

OR

(i) Differentiate between the roles of B-lymphocytes and T-lymphocytes in generating immune responses.

(ii) Principle of vaccination is based on the property of "memory" of the immune system. Taking one suitable example, justify the statement.

18. A corn farmer has perennial problem of corn-borer infestation in his crop. Being environmentally conscious he does not want to spray insecticides. Suggest solution based on your knowledge of biotechnology. Write the steps to be carried out to achieve it and state how it works. 3

19. (a) Differentiate between inbreeding and outbreeding. 3

(b) List any three advantages and one important disadvantage of inbreeding practice in animal husbandry.

20. Bee keeping practice is a good income generating industry. Write the different points to be kept in mind for successful bee keeping. Write the scientific name of the most common Indian species used for the purpose. 3

21. While on a visit to a pond in the city-neighbourhood, the visitors were delighted to find large expanse of water covered with colourful algal mass. 3

(a) As a student of biology, do you agree with their delight? Give reasons in support of your answer.

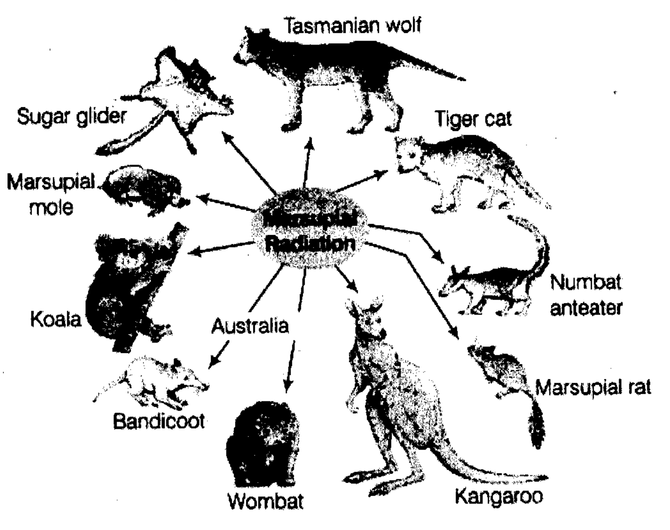
(b) Explain the cause of such algal growth.

OR

Give any three reasons at different categories for conserving biodiversity.

SECTION D

22. 3

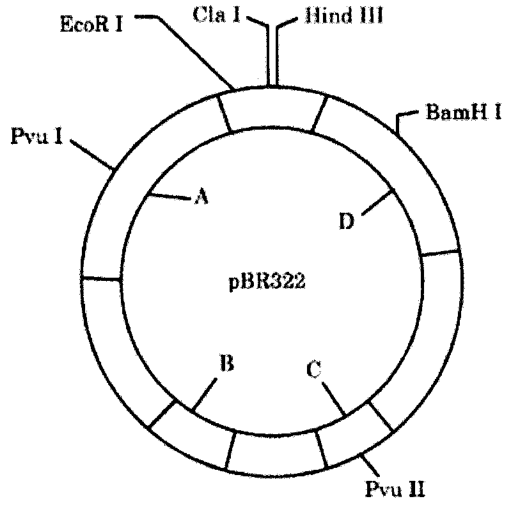


(a) Mention the specific geographical region where these organisms are found.

(b) Name and explain the phenomenon that has resulted in the evolution of such diverse, species in the region.

(c) Explain giving reasons the existence of placental wolf and Tasmanian wolf sharing the same habitat.

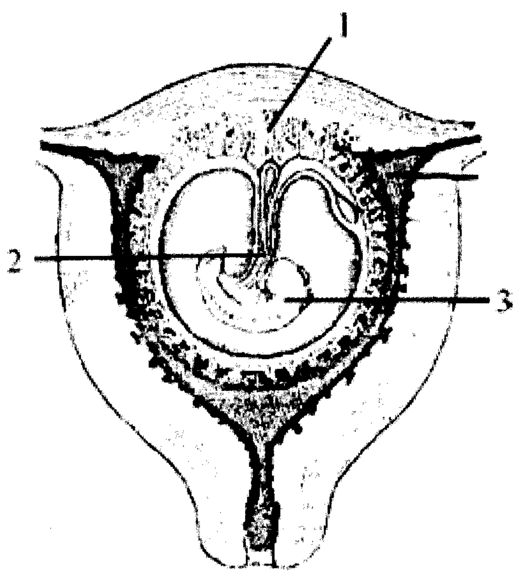
23. Study the figure of vector pB322 given below: 3



Identify A, B and C and explain their roles in cloning a vector.

24. a) Identify the parts labelled 1,2 and 3 in the diagram given. 3

b) Draw a labelled diagram of a human blastocyst



SECTION E

25. (a) You are given castor and bean seeds. Which one of the two would you select to observe the endosperm? 5

(b) The development of endosperm precedes that of embryo in plants. Justify.

(c) When and where do tapetum and synergids develop in flowering plants? Mention their functions.

OR

Differentiate between spermatogenesis and Oogenesis on the basis of

(i) Time of initiation of the process

(ii) Site of completion of the process

(iii) Nature of meiotic division undergone by gamete mother cells

(b) Name the hormones and state their role involved in controlling spermatogenesis in humans.

26. One chromosome contains one molecule of DNA. In eukaryotes the length of the DNA molecule is enormously large. Explain how such a long molecule fits into the tiny chromosomes seen at Metaphase. 5

OR

a) What is heterogamety? Explain the mechanism of sex determination in Drosophila.

b) Compare in any two ways the chromosomal theory of inheritance as proposed by Sutton and Bovery with that of experimental results on pea plant presented by Mendel.

27. As a part of adolescence health education Programme, prepare a pamphlet showing common problems of adolescence with special regard to mental problems. 5

OR

Explain the significance of the following organisms

a) Trichoderma polysporum *b)genetically modified streptococcus* *c) Mycorrhiza* *d) Monascus purpureum* *e) Methanogens*

End of the Question Paper