

SECOND PRE-BOARD EXAMINATION (2017- 2018)
CLASS: XII

Subject: BIOLOGY

Date: 24-01-2018

Time allowed: 3 Hours

Maximum Marks: 70

General Instructions

- 1) This question paper consists of five sections A, B, C, D and E. Section A contains 5 questions of 1 mark each, section B contains 5 questions of 2 mark each. Section C is of 12 questions of 3 marks each. Section D is value based question of 4 marks and Section E contains 3 questions of 5 marks each.
- (2) **All** questions are compulsory.
- (3) There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of 3 marks and all questions of 5 marks. Attempt only one of the choices in such questions.
- (4) Q.23 is Value based question.
- (5) Wherever necessary, the diagrams drawn should be with proper labeling.
- (6) Marks are indicated against each question.
- (7) Please check this question paper contains **7** printed pages only.
- (8) Please check that this question paper contains **26** questions.

SECTION- A

1. Give 2 examples of plants in which chasmogamous and cleistogamous both types of flowers are present. 1
2. Mention the importance of variability in number of tandem repeats in DNA fingerprinting. 1
3. Comment on similarity between the wings of cockroach and wings of a bird. What do you infer from the above, with reference to evolution? 1
4. Write the scientific name of plant which is source for morphine. 1

5. What is the basis of Modern synthetic theory of evolution? 1

SECTION - B

6 a) What are interferons?

b) Why does a doctor administer tetanus antitoxin and not a tetanus vaccine to a child injured in a roadside accident with a bleeding wound? Explain. 2

7. Draw a labeled diagram of internal structure of testes.

OR

Draw a labeled diagram of section view of a seminiferous tubule (enlarged) 2

8. Give differences between transcription in bacterial cell and eukaryotic cell. 2

9. DDT content in the water of a lake that supplies water to nearby village was found to be 0.003 ppm. The kingfisher in that area were reported to have 2ppm of DDT. Why was the concentration increased in these birds? What harm will it cause to bird population? Name the phenomenon. 2

10. Describe the technology that has successfully increased the herd size of cattle in short time to meet the increasing demand of growing population. 2

SECTION - C

11. a) State the function of secondary lymphoid organs in humans.

b) Why do the symptoms of malaria do not appear immediately after the entry of sporozoites into the human body when bitten by *Anopheles*? Explain. 3

12.(a) What is amniocentesis? Why has the government imposed a statutory ban in spite of its importance in medical field?

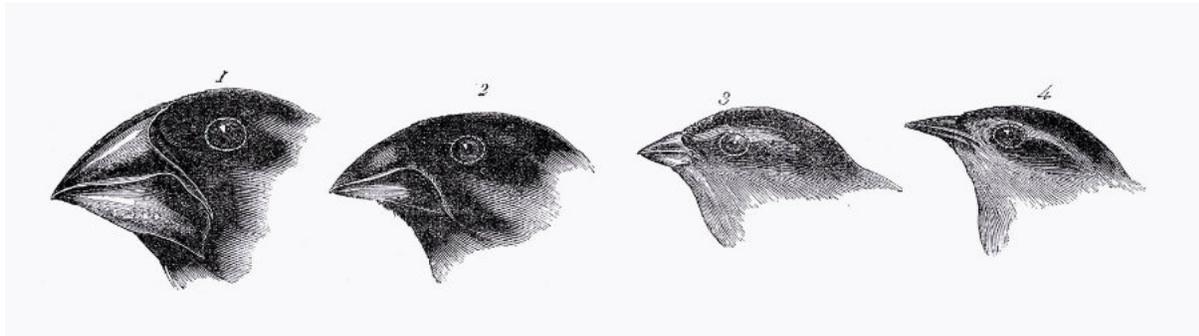
b) How are assisted reproductive technologies helpful to humans? How are ZIFT and GIFT different from intrauterine transfers? Explain. 3

13. Anthropogenic actions can hasten the evolution. Explain with the help

of suitable example.

OR

- a) What is the significance of *Archaeopteryx* in the study of organic evolution.
- b)

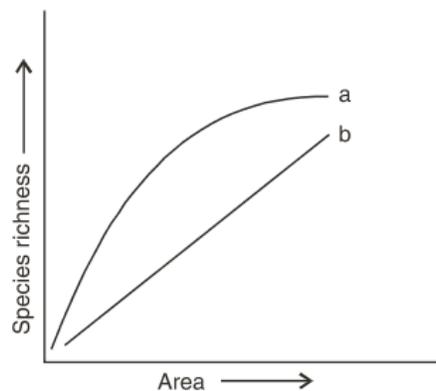


- i) Write your observations on the variations seen in Darwin's finches shown above.
- ii) How did Darwin explained the existence of different varieties of finches on Galapagos island.

3

14.a) What is cryopreservation. Give its one use.

b)



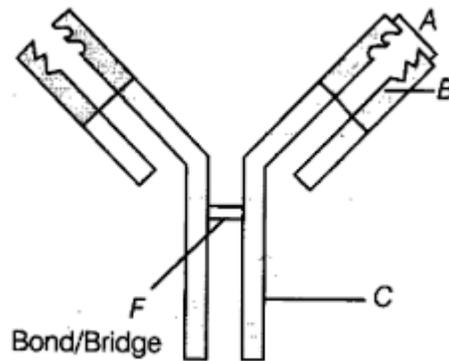
The above graph shows species-area relationship. Write the equation of the curve 'a' and explain. 3

15. Plasmid is a boon to biotechnology. Justify this statement quoting the production of human insulin as an example. 3

16.a) What is the inheritance pattern observed in the size of starch grain and seed shape of *Pisum Sativum*? Work out the monohybrid cross showing the above traits. How does this pattern of inheritance deviate from that of Mendelian law of dominance?

b) Differentiate between trisomic and triploid condition. 3

17.



Identify **A, B and C** in the schematic diagram of an antibody given in the above diagram and answer the questions.

- Write the chemical nature of an antibody
- Name the cells that produce antibody in humans
- Mention the type of immune response provided by an antibody. 3

18.a) A moss plant produces a large number of anthrezooids but relatively only a few egg cells. Why?

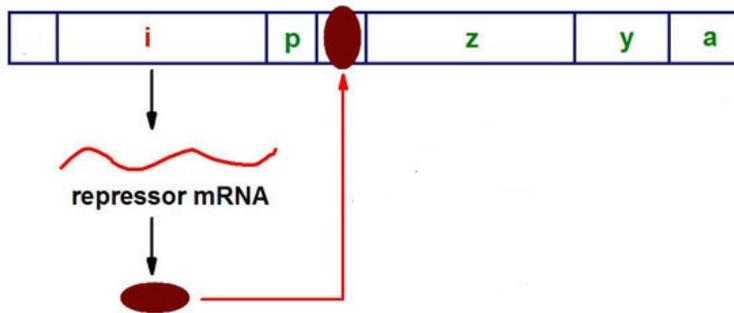
b) The number of taxa exhibiting asexual reproduction is drastically reduced in the higher plants (angiosperms) and higher animals (vertebrates) as compared to lower groups of plants and animals. Analyse the possible reasons for this situation. 3

19. What do you understand by the term biopesticide? Name and explain the mode of action of a popular biopesticide. 3

- 20.a) What are 'molecular scissors'? Give one example.
 b) Explain their role in recombinant DNA technology.

3

21.a)



- i) Identify *i* and *p*
 ii) Name the 'inducer' for this operon and explain its role.
 b) "Genes contain the information that is required to express a particular trait." Explain.

3

22.(a) Name the blank spaces a, b, c and d from the given table below:

Type of microbe	Scientific name	Product	Medical Application
i) Fungus	a	Cyclosporin	b
ii) c	<i>Monascus purpureus</i>	Statin	d

- b) Explain the role of bucolovirus as biological control agent.

3

SECTION - D

23. Pradeep was waiting at a bus stop, when many passengers along with their kids were also on the way to school. A bus came and painted the children with black smoke ejected from its exhaust pipe. Pradeep immediately stopped the bus and called the driver out to show him what he had done. Only a few passengers supported Pradeep while rest were restless for being delayed.

- a) How catalytic convertors reduce vehicular gas emission?

b) We often spot vehicles with Bharat stage IV stickers. What does it imply?

c) What values did Pradeep promote through his action?

4

SECTION E

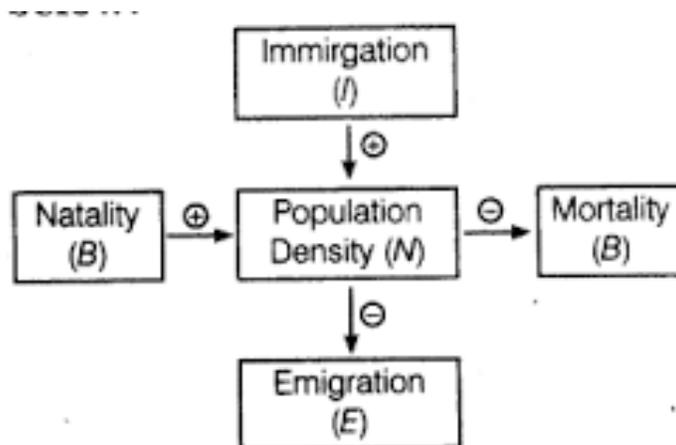
24. a) Name the population growth pattern the equation $\left(\frac{dN}{dt} = rN\right)$ represents. What does 'r' represent in the equation? Write its importance in population growth.

b) Explain the principle of carrying capacity by using population Verhulst-Pearl logistic growth curve.

c) Explain the equation

$$N_{t+1} = N_t + [(B + I) - (D + E)]$$

On the basis of the flowchart given below:



5

OR

a) Explain by giving example, how co-extinction is one of the causes of loss of biodiversity? List other three causes.

b) Write any two hypothesis put forth by ecologists explaining the existence of greater biodiversity in tropical regions than in temperate regions.

5

25. a) How does microspore mother cell develop into mature pollen grains in angiosperm?

b) Describe the structure of a mature pollen grain and draw a labelled diagram of its two-celled stage. 5

OR

a) Mention any four strategies adopted by flowering plants to prevent self-pollination.

b) Explain the process of development of endosperm in coconut.

c) Draw a diagram of Globular embryo in a dicot. 5

26.a) Explain the role of ^{35}S and ^{32}P in the experiment conducted by Hershey and Chase.

b) Explain the role of enzymes involved in DNA replication. 5

OR

a) How does chromosomal disorder differ from a Mendelian disorder? Give one example of each.

b) What is pleiotropy? Give an example of disease with symptoms of it.

c) State the law of independent assortment. 5