

Class XII (2015-16)

Biology (044)

SET: A

Time allowed: 3 Hrs

Maximum Marks: 70

General Instructions:

There are a total of 26 questions and five sections in the question paper. All questions are compulsory.

Section A contains question number 1 to 5, Very Short Answer type questions of one mark each.

Section B contains question number 6 to 10, Short Answer type I questions of two marks each.

Section C contains question number 11 to 22, Short Answer type II questions of three marks each.

Section D contains question number 23, Value Based Question of four marks.

Section E contains question number 24 to 26, Long Answer type questions of five marks each.

There is no overall choice in the question paper; however, an internal choice is provided in question of two marks, one question of three marks and all three questions of five marks. Examinee is to attempt any of the questions out of the two given in the question paper with same question number.

Where ever necessary draw neat and labeled diagrams.

SECTION -A

In plants the units of vegetative propagation are called vegetative propagules.

Name the vegetative propagules in the following:

a. Potato

b. Bryophyllum

1

2. State any one reason to explain why RNA viruses mutate and evolve faster than DNA viruses.

1

3. Ecological sanitation contributes to Swach Bharat Abhiyan and already there are working "Eco-san toilets" in Kerala. Mention any two advantages of ecosan toilets that help in conservation of our environment.

1

4. State the role of Trichoderma with respect to organ transplantation and Nucleopolyhedrovirus with respect to crop pest management.

1

5. In seas the biomass of fishes far exceeds that of phytoplanktons, and the biomass of large fishes that feeds on smaller ones also is greater than their prey. Construct the ecological pyramid based on the above relationship. 1

SECTION -B

6. Name the oral contraceptive pill for human females developed by Central Drug Research Institute, Lucknow, India. Mention any three ways in which it is different from other conventional oral contraceptives.

OR

Draw a neat and labeled diagram of a human sperm. 2

7. A plant with genotype AaBb (axial and blue flowers) was crossed with aabb (terminal and white flowers). What would be the phenotypic ratio of the progeny? Mention the term to denote this kind of crosses. 2

8. What is inbreeding? Mention three advantages of inbreeding. 2

9. State the principle of DNA Gel Electrophoresis. Mention any two applications of this technique. 2

10. Fill in the blanks A, B, C, and D in the given table. 2

Disease Name	Causative agent	Mode of transmission	Major symptoms
Filariasis	Wuchereria bancrofti	A	Inflammation of lymphatic vessels resulting in gross deformities
Ring worm	B	Soil and sharing of clothes etc	Dry scaly itching skin lesions
Typhoid	C	Contaminated food and water	Sustained high fever, stomach pain, head ache, constipation etc.
Malaria	Plasmodium species	D	High fever recurring every 3-4 days

SECTION -C

11. What is Apomixis? Mention any two ways by which apomict seeds are formed. What advantage does a farmer has when he used apomict seeds instead of hybrid seeds? 3
12. Describe the construction and working of a biogas plant with a diagram showing its parts. 3
13. One chromosome is one DNA molecule. A typical mammalian cell of around one micron size has 2.2m long DNA. Explain how such a long molecule of DNA is packed into the tiny chromosomes seen at metaphase. 3
4. How is placenta formed? Mention how it acts as a transporting medium and an endocrine tissue. 3
- . About 40% of population in India has malnutrition and hidden hunger. Indian Agricultural Research Institute, New Delhi, developed a programme to minimize and control this malnutrition and hidden hunger in India. What is programme called? Specify four objectives of this programme? Also mention any one example of such a produce. 3
5. Following are the steps in DNA Finger Printing. Arrange them in order according to its procedure and write in your answer booklet.
- A. Separation of DNA fragments by electrophoresis.
 - B. Digestion of DNA by restriction endonucleases.
 - C. Hybridization of DNA fragments using radio-labeled VNTR probes.
 - D. Isolation of DNA
 - E. Transfer of separated DNA fragments to synthetic membrane such as nylon or nitrocellulose (Southern blotting).
 - F. Detection of hybridized DNA fragments by autoradiography. 3
7. What are biodiversity hot spots? Name the three biodiversity hot spots of Indian sub-continent. What is the advantage of declaring a geographical region as hot spot? 3
18. What are genetically modified organisms? Mention any four advantages of genetically modified crop. 3
19. Draw the diagrammatic representation of S.L.Miller's experiment. What was the aim and conclusion of this experiment? 3

20. Name the WBC's that produce antibodies. Draw the typical structure of an antibody molecule. Name the different types of antibodies in our body.

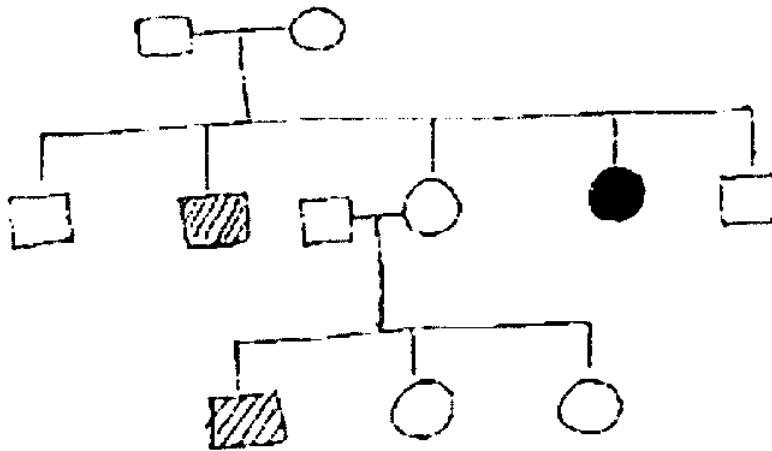
OR

Cigarette smoking among the adolescents/teenagers becomes very prevalent in our society, in spite of having statutory warnings on cigarette packets. As a social activist advise the adolescents/teenagers the importance of avoiding smoking. (Mention any six points) 3

21. (a) Draw the transcription unit and label the promoter, terminator, template strand and coding strand.

(b) Name the enzymes involved in the synthesis of rRNA, tRNA and hnRNA. 3

22. Observe the pedigree chart and answer the following questions.



- Identify whether the trait is autosomal or sex-linked.
- Give the example of the genetic disorder in humans which shows this pattern of inheritance.
- What is the cause of this disease? 3

SECTION -D

23. Mr. Li purchased a new model of CNG car instead of Petrol and Diesel versions.

- What qualities and values are exhibited by him?
- What are the advantages of using CNG as fuel over petrol and diesel?
- Suggest any two more measures which can help in reducing vehicular pollution in big cities of India. 4

SECTION -E

24. Describe the process of Spermatogenesis highlighting its hormonal control and the ploidy of cells at different stages.

OR

Describe the menstrual cycle and its hormonal regulation in human females. 5

25. (a) Write an equation for Verhulst Pearl logistic growth where N =Population Density, at a time ' t ', r =Intrinsic rate of natural increase, and K =Carrying capacity.
(b) Draw the graph of population whose population density has reached the carrying capacity.
(c) Why the logistic growth model is considered a more realistic for most animal populations.

OR

- (a) What is deforestation?
(b) Mention any two human activities that cause deforestation.
(c) Mention any four consequences of deforestation. 5

5. Explain how Biotechnology has been applied in each of the following:

- a. Treatment of Diabetes Mellitus
b. Treatment of Immune Deficiency due to ADA deficiency

OR

- i. What is RNAi? How this technique is useful in producing pathogen or pest resistant tobacco plant?
ii. How a biotechnological procedure help in the diagnosis of diseases before their symptoms do not appear in the infected person? 5