

Time: 3 hrs

MM: 70

GENERAL INSTRUCTIONS

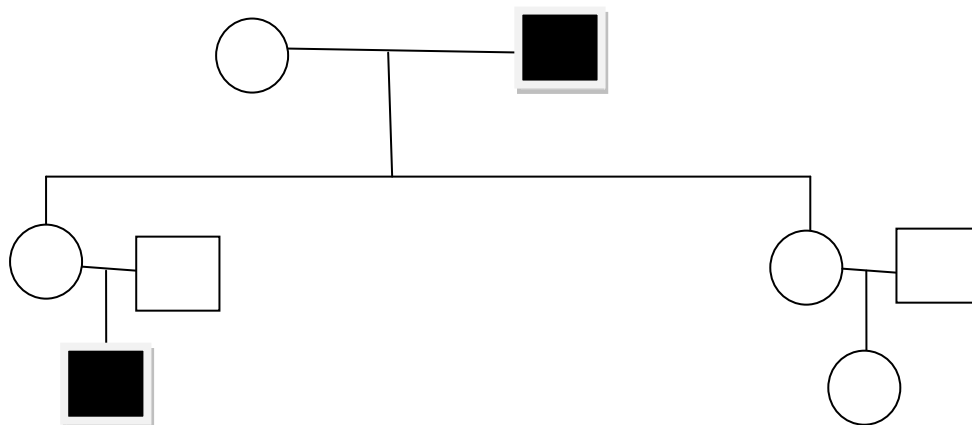
1. There are a total of 26 questions and five sections in the question paper. All the questions are compulsory.
2. Section A contains question number 1 to 5, very short answer type questions of 1 mark each.
3. Section B contains question number 6 to 10, short answer type I questions of 2 marks each.
4. Section C contains question number 11 to 22, short answer type II questions of 3 marks each.
5. Section D question of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out contains question number 23, value based question of four marks
6. Section E contains question number 24 to 26, long answer type questions of five marks each.
7. There is no overall choice in the question paper, however an internal choice is provided in one question of two marks, one of the two given in the question out of the two given in the question paper with the same question number.

Section – A

1. How do algal blooms affect the life in water bodies?
2. What do you understand by the origin of replication? During recombinant DNA Who helps to identify the origin of replication?
3. How does smoking tobacco in human led to oxygen deficiency in the body?
4. Normally, an embryo develops in one seed is squeezed, many embryos of different shapes and sizes are seen. Mention how it has happened?
5. Write the equation that helps in deriving the net primary productivity of an ecosystem.

Section – B

6. Why are angiosperm anther called Dithecous? Describe the structure of its microsporangium.
7. Describe the different ways by which natural selection can affect the frequency of heritable traits in the population.
8. This is the pedigree of a family tracing the movement of the gene for haemophilia .Explain pattern of inheritance of the disease in the family.



9. State what happens when an alien gene is ligated at the sal I site of Pbr322 plasmid?

OR

Why is “Agrobacterium – mediated genetic engineering transformation” in plants considered as natural genetic engineering?

10. A considerable amount of lactose is added to the to the growth medium of E.coli. How is the lac operon switched on in the bacteria? Mention the state of the operon where lactose is digested.

Section – C

11. Suggest and explain any three Assisted reproductive technologies [ARTs] to an infertile couple.
12. In order to avoid vehicular pollution, the vehicles are equipped with catalytic converter . What are the measures to control air pollution?
13. Domestication of animals has played a vital role in the evolution of the human beings. In the 21st century ,new and improved techniques have allowed humans to get maximum benefits in the form of milk, meat etc. Mention such method and explain MOET.
14. A primary succession starts on a bare rock and reaches the climax community. Explain how it does?
15. Explain with the help of labelled diagram of an embryo of a grass.
16. Linkage and crossing over of genes are alternatives to each other .justify with the help of an example.

OR

When a red flower antirrhinum plant was crossed with a white flowered antirrhinum plant, the f1 offspring had pink flowers .mention:-

- a) The genotype of f1 plant.
 - b) The reason why it did not bear the parental red or white flower colours?
17. Explain in brief logistic growth model using universal equation.
 18. The pathogen of a disease depends on RBCs of human for growth and reproduction . The person with chill and high fever .
 - a) Identify the disease and the pathogen.
 - b) What is the cause of fever?
 - c) Represent the life cycle of the pathogen diagrammatically.
 19. With the help of any two suitable examples explain the effect of anthropogenic actions on organic evolution.
 20. What is 'biofortification'? Write its importance .Mention the contribution of Indian agricultural research institute towards it with the help of two examples.
 21. White Bengal tigers are protected in special setting in zoological parks .Tiger reserves are maintained in western Ghats.
 - a) How do these two approaches differ from each other? Mention the advantages of each one.
 - b) What is the significance of cryopreservation techniques?

OR

Co- extinction and introduction of alien species too are responsible for the loss of biodiversity .Explain how.

22. How does beta –galactosidase coding sequence act as a selectable marker? Explain. Why is it a preferred selectable marker to antibiotic resistance genes?

Section- D

23. Father of Rahul works as a scientist in central pollution control board. One day when he learnt about the biological oxygen demand during his biology class in his school,. On the next day he started to collect the samples of water. At point "A" he collected the sample. Similarly, he collected the samples at point "B" and "C". His school was adjoining to the premises of a sugar factory. On his way to home , there was a pond containing sewage waste water. he collected those samples and gave it to his father to evaluate the BOD of all samples. On the next day, Rahul's father handed him the results. The BOD of the sample collected at point A, B and C were 20,10,5mg/l.based on the information , answer the questions asked below.
 - a) As per the results which of the following sample was most polluted?
 - b) The sample collected from point 'C' showed lowest BOD among at all. What should be point be?
 - c) Considering the BOD of sample collected from point 'B',it has BOD as 10 mg/l. What should be point B?
 - d) IF the point 'A' shows the maximum BOD, what should be point 'A'?

Section – E

24. Explain the ovarian and uterine events that occur during a menstrual cycle in a human female, under the influence of pituitary and ovarian hormone respectively.

OR

- a) Draw a diagrammatic sectional view of human ovary showing different stages of oogenesis along with corpus luteum.
- b) Describe the post-zygotic events leading to implantation and placenta formation in humans. Mention any two functions of placenta.

25. a) Write the scientific name of the organism Thomas Hunt Morgan and his colleagues worked with for their experiments. Explain the correlation between linkage and recombination with respect to genes as studied by them.

b) How did Sturtevant explain gene mapping while working with Morgan?

OR

- a) Explain the role of DNA dependent RNA polymerase in initiation, elongation, and termination during transcription in bacterial cell.
- b) How is transcription a more complex process in eukaryotic cells? explain.

26. a) Name the source from which insulin was extracted earlier. Why is this insulin no more in use of diabetic people?

b) Explain the process of synthesis of insulin by Eli Lilly company. Name the technique used by company.

c) How is the insulin produced by human body different from the insulin produced by the above mentioned company?

OR

What are transgenic animals? Explain any four ways in which such animals can be beneficial to humans.