



STD XII

BIOLOGY (044)

Maximum Marks: 70

3-12-15

Time allowed: 3hrs

**General Instructions:**

1. There are a total of 26 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question number 1 to 5, Very short answer type questions of one mark each.
3. Section B contains question number 6 to 10, Short answer type I questions of two marks each.
4. Section C contains question number 11 to 22, Short answer type II questions of three marks each.
5. Section D 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 question of three marks and all three questions of five marks. An examinee is to attempt any one questions out of the two given in the question paper with the same question number.

**SECTION A**

1. Mention how bears escape from stressful time in winter. (1)
2. Write the possible source of RNA interference (RNAi) gene. (1)
3. *Papaver* and *Michelia* both have muticarpellary ovaries. How do they differ from each other? (1)
4. Name the specific components and the linkage between them that form deoxyadenosine. (1)
5. State what happens when an alien gene is ligated at SalI site of pBr 322 plasmid. (1)

**SECTION B**

6. Name the plant source of *ganja*. How does it affect the body of the abuser? (2)
7. Write about the ancestry and evolution of bat, horse and human on the basis of comparative study of their forelimbs. What are these limbs categorized as? (2)
8. How does Monarch Butterfly defend itself from predators? Explain. (2)
9. State one advantage and one disadvantage of cleistogamy. (2)

**OR**

- a) Where do the signals for parturition originate from, in humans?
- b) Name the common phenomenon with reference to reproduction in Rotifers, Honey bees and Turkey

10. a) Mention the cause and the body system affected by ADA deficiency in humans.
- b) Name the vector used for transferring ADA-DNA into the recipient cells in humans. Name the recipient cells. (2)

### SECTION C

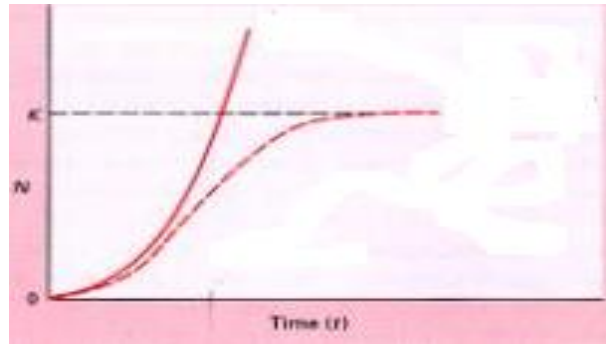
11. a) What is the programme called that is involved in improving success rate of production of desired hybrid and herd size of cattle?
- b) Explain the method used for carrying this programme for cows. (3)
12. Alien species are highly invasive and are a threat to indigenous species. Substantiate this statement with any three examples. (3)
13. How is Bt cotton plant created as GM plant? How is it protected from boll worm infestation?(3)
14. Explain the basis on which gel electrophoresis technique works. Write any two ways the products obtained through this technique can be utilized. (3)
15. Draw a neat diagram to show longitudinal section of a post-pollinated pistil showing entry of pollen tube into a mature embryo sac and label the following parts:
- a) chalazal end    b) hilum    c) filiform apparatus (3)
16. In pea plants, the colour of the flower is either violet or white where as human skin colour show many gradations. Explain giving reason how is this possible. (3)
17. Explain the different steps involved in sewage treatment before it can be released into natural water bodies. (3)
18. Evolution is a change in the gene frequencies in a population in response to changes in the environment in a time scale of years and not centuries. Justify this statement with reference to DDT. How does the theory of Hugo de Vries support this? (3)
19. Explain the functions of each of the following:
- a) Fimbriae
- b) Umbilical cord
- c) Sertoli cells (3)
20. Given below are the sequence of nucleotides in a particular mRNA and amino acids coded by it.

UUU AUG UUC GAG UUA GUG UAA

Phe – Met – Phe – Glu – Leu – Val

Write the properties of genetic code that can be and that cannot be correlated from the above given data. (3)

21. Study the graph given below:



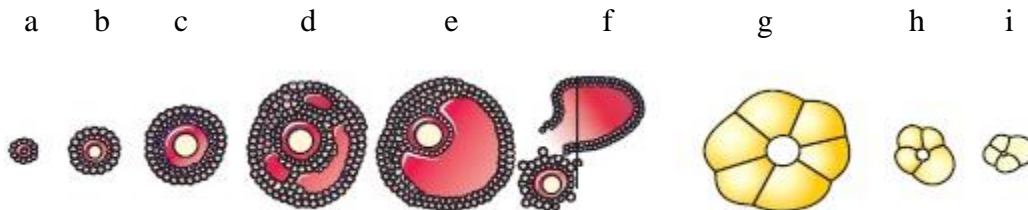
- (i) What does the curve 'a' represent in the graph? What does 'K' stand for?
- (ii) Which one of the two curves is considered a more realistic one for most of the animal population?
- (iii) Which curve would depict the population of a species of deer if there are no predators in the habitat? Why is it so? (3)

22. Give reason for the following:

- a) 'Saheli is a well accepted contraceptive pill'
- b) Tubectomy is considered as a contraceptive method. (3)

**OR**

The following is the illustration of the sequence of ovarian events 'a' to 'i' in a human female:



- (a) Identify the figure that illustrates corpus luteum and name the pituitary hormone that influences its formation.
- (b) Specify the endocrine function of corpus luteum. How does it influence the uterus?

### SECTION D

23. An active member of an awareness group conducts regular programmes to sensitise public against alcoholism amongst youth- a serious health hazard in his locality.

- a) Identify the values the member of the group is trying to propagate amongst the people in his locality.
- b) Why is alcoholism a serious health hazard? (4)

## SECTION E

24. How detritus is decomposed step by step by different agents and made available as nutrients to the plants? Explain (5)

**OR**

- a) Taking one example each of habitat loss and fragmentation, explain how are the two responsible for biodiversity loss
- b) Explain two different ways of biodiversity conservation.
25. a) Why is DNA considered a better genetic material than RNA? Give any two reasons.
- b) How is hnRNA processed to form mRNA? (5)

**OR**

- a) A typical mammalian cell has 2.2 m long DNA molecule, where as the nucleus in which it is packed measures about  $10^{-6}$ m. Explain how such a long DNA molecule is packed within a tiny nucleus in the cell.
- b) Transcription and translation can be coupled in prokaryotic cells but not in eukaryotic cells. Why?
26. a) Name and explain any four lymphoid organs present in humans.
- b) Categorise the named lymphoid organs as primary or secondary lymphoid organs, giving reasons. (5)

**OR**

- a) Name the Indian scientist whose effort brought 'green revolution' in India
- b) Mention the steps that are essentially carried out in developing a new genetic variety of crop under plant breeding programme.
- c) Mention the role of cyanobacteria as biofertilizer.

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