Total No. of Printed Pages—8

HS/XII/Sc/Bio/23

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BIOLOGY

(Theory)

Full Marks : 70

Time : 3 hours

General Instructions :

(i) Write all the answers in the Answer Script.

(ii) Attempt all parts of a Group serially in one place.

(iii) *All* questions are compulsory.

(iv) The figures in the margin indicate full marks for the questions.

(v) This question paper consists of 5 (five) Groups—A, B, C, D and E.

Group—A consists of 12 questions (multiple-choice type) of which 10 questions are to be answered. Each question (Q. Nos. **1**–**12**) carries *1* mark.

Group—B consists of 7 questions (very short-answer type—I) of which 5 questions are to be answered. Each question (Q. Nos. **13**–**19**) carries *1* mark and to be answered in one word/sentence.

Group—C consists of 5 questions (short-answer type—I). Each question (Q. Nos. **20**–**24**) carries *2* marks with alternatives to be answered in *20–30* words.

Group—D consists of 12 questions (short-answer type—II) of which 10 questions are to be answered. Each question (Q. Nos. **25**–**36**) carries *3* marks and to be answered in *30–40* words.

Group—E consists of 3 questions (long-answer type). Each question (Q. Nos. **37**–**39**) carries *5* marks with alternatives to be answered in *60–80* words.

GROUP—A

Choose and write the correct answer of the following (any *ten*) : 1×10=10

1. Which of the following is released from the ovary at the time of ovulation?

(a) Primary oocyte

(b) Oogonium

(c) Secondary oocyte

(d) Ovum

2. The first phase of embryonic development is

(a) cleavage

(b) blastulation

(c) gastrulation

(d) placentation

3. Amoebic dysentery is a disease caused by

(a) *Plasmodium vivax*

(b) *Entamoeba histolytica*

(c) *Ascaris lumbricoides*

(d) *Wuchereria bancrofti*

4. A process of transfer of genetic information is

(a) transversion

(b) transcription

(c) translation

(d) translocation

5. In angiosperms, triple fusion is required for the formation of

(a) embryo

(b) endosperm

(c) fruit

(d) seed

6. The hard outer layer of pollen grain is called

(a) intine

(b) germ pore

(c) exine

(d) tapetum

7. A transgenic plant which may help in solving the problem of night blindness is

(a) BT cotton

(b) golden rice

(c) Flavr Savr tomato

(d) starlink maize

8. Ecosystem has two components. They are

(a) plants and animals

(b) amphibians and reptiles

(c) biotic and abiotic

(d) weeds and trees

9. The organism which causes disease in plants and animals is called

(a) vector

(b) pathogen

(c) insect

(d) worm

10. The loss of individual due to the death in a population is called

(a) natality

(b) mortality

(c) emigration

(d) immigration

11. Fungal association with the roots of higher plants in mycorrhiza is

(a) mutualism

(b) commensalism

(c) parasitism

(d) predation

12. Galapagos islands were associated with

(a) Jean Lamarck

(b) Charles Darwin

(c) Alfred Wallace

(d) Hugo de Vries

GROUP—B

Answer the following questions in one word/sentence each (any *five*) : 1×5=5

13. Define xenogamy.

14. Expand GIFT.

15. Define ecosystem.

16. What is a plasmid?

17. What are Okazaki fragments?

18. What is dihybrid cross?

19. What is crossing over?

GROUP—C

20. Distinguish between self-pollination and cross-pollination. 2

21. How is sex determined in human beings? 2

Or

Explain the law of segregation with the help of an example.

22. Draw a well-labelled diagram of an antibody molecule. 2

Or

Draw a well-labelled diagram of human sperm.

23. Explain biopatent. 2

24. Differentiate between 'food chain' and 'food web'. 2

GROUP—D

Answer the following questions (any *ten*) :

25. Where are Leydig cells found? What are their functions? 1+2=3

26. Define alcohol addiction. Write the damaging effects of alcohol addiction. 1+2=3

27. What is menstrual cycle? Name the hormones and their functions which regulate menstrual cycle. 1+2=3

28. Explain gene therapy with an example. 3

29. Mention the significant characteristics of plants pollinated by water. 3

30. Briefly explain the role of microbes in sewage treatment. 3

31. Differentiate between incomplete dominance and co-dominance with examples. 3

32. What is BT cotton plant? Explain how this cotton plant is able to resist the infestation by bollworms. 1+2=3

33. Define predation. How does prey-predator relationship maintain a balance in the ecosystem? 1+2=3

34. What is immunity? Distinguish between active immunity and passive immunity. 1+2=3

35. Who discovered the first antibiotic and from where it was extracted? Name the microbes from which cyclosporin–A is extracted. 1+1+1=3

36. Explain briefly how comparative anatomy supports biological evolution. 3

GROUP—E

37. Explain chromosomal theory of inheritance. Who proposed this theory? 4+1=5

Or

What is oogenesis? Explain the major events involved in oogenesis. 1+4=5

38. A man with blood group 'A' married a woman with blood group 'B'. They have a son with AB blood group and a daughter with blood group 'O'. Work out the cross and write the phenotype and genotype of the siblings. 3+2=5

Or

Explain the mechanism of translation with the help of a diagram. 4+1=5

39. Explain the steps involved in decomposition process. 5

Or

What is biodiversity? Describe the strategies involved in biodiversity conservation. 1+4=5

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