Please check that this question paper contains 11 printed pages.

Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

Please check that this question paper contains 26 questions.

Please write down the Serial Number of the question before attempting it.

15 minutes time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

जीव विज्ञान (सैद्धान्तिक)
(केवल नेत्रनीन परीक्षार्थियों के लिए)

BIOLOGY (Theory)
(FOR BLIND CANDIDATES ONLY)

निर्धारित समय : 3 प्रण्टे
Time allowed : 3 hours

अधिकतम अंक : 70
Maximum Marks : 70
General Instructions:

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

(ii) **Section A** contains questions number 1 to 5, Very Short Answer Type Questions of **one** mark each.

(iii) **Section B** contains questions number 6 to 10, Short Answer Type-I Questions of **two** marks each.
(iv) **Section C contains questions number 11 to 22**, Short Answer Type-II Questions of **three** marks each.

(v) **Section D contains question number 23**, Value Based Question of **four** marks.

(vi) **Section E contains questions number 24 to 26**, Long Answer Type questions of **five** marks each.

(vii) 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 of the questions out of the two given in the question paper with the same question number.

### SECTION A

1. पृष्ण पाद्रों में नर युग्मकों के बनने के प्रक्रम का नाम लिखिए।

   Name the process of formation of male gametes in flowering plants.

2. उन दो तरीकों की सूची बनाई जिनके उपयोग से पंजाब में गायों की बन्ने पूर्वज नस्ल से सहिवाल नस्ल की गायें प्राप्त हुईं।

   List the two ways that have been used and resulted in Sahiwal cows in Punjab from ancestral wild cows.
3. Give an example of an organism that exhibits XO-type of sex determination. What is this sex determination designated as?

4. How does *Gambusia* fish help in controlling the spread of Malaria?

5. Name the first discovered restriction endonuclease and state its specific role.

SECTION B

6. (a) State the primary requirement to ensure cross breeding experiments in plants.

(b) Name the techniques which help to achieve this requirement.
7. What is a cistron? Why is the structural gene in a transcription unit of eukaryotes called monocistronic and that in prokaryotes/bacteria called polycistronic? Give reasons.


9. Name the flowering plant which employs ‘sexual deceit’ to get pollinated by a species of bee. Write how pollination occurs in this flower.

10. Differentiate between Commensalism and Mutualism. Give an example of each from the plant kingdom.

OR

Expand GPP and NPP. Differentiate between the two.
SECTION C

11. Name and write the functions of the paired accessory glands in human male reproductive system.

12. Name the cell from which the endosperm develops in a coconut. Mention its ploidy. Explain the process of endosperm development in a coconut.

13. Explain initiation, elongation and termination in the process of transcription in bacteria.

14. Why did Hershey and Chase work with bacteriophages in their experiments to prove that DNA is the genetic material? Explain.

15. Name and explain the phenomenon of evolution exhibited by Australian marsupials.
16. Tobacco smoking, chewing or snuffing is very injurious to health of humans. Justify.

17. List the three traits or characters that plant breeders have tried to incorporate into crop plants.

18. Explain the different steps involved in the primary treatment of sewage.

19. Write the three basic steps involved in genetically modifying an organism.

20. (a) Write the importance of gel electrophoresis in biotechnology.

(b) Explain the different steps carried in gel electrophoresis to get the desired results.

22. तुंगता बीमारी क्या है? इस समस्या के समाधान के लिए आपका शरीर क्रियात्मक रूप से किस प्रकार अनुकूलन करता है?

अथवा

प्राथमिक अनुकूलण कहाँ और कैसे होता है? व्याख्या कीजिए।

What is Altitude Sickness? How does your body physiologically adapt to overcome it?

OR

Where and how does the Primary Succession occur? Explain.

खण्ड घ

SECTION D

23. The practice of defecation in the open fields is not advised due to many reasons. Such a practice affects human health by causing and spreading diseases. Name a disease thus caused with any two symptoms and mode of infection. Also name the causative organism.
24. (a) Seeds offer several advantages to angiosperms. Describe any three such advantages.

(b) Why is banana called a parthenocarpic fruit? Would you call banana a true fruit? Give reason in support of your answer.

OR

(a) Describe ovarian events in the menstrual cycle of the female reproductive system in humans.

(b) Explain the role played by pituitary hormones during the events described above.
25. (a) Mention the traits in pea plants, where a single gene product produces more than one phenotypic effect. Write their effect in homozygous dominant and homozygous recessive states.

(b) Taking an example of human blood groups, explain dominance, co-dominance and multiple allelism.

OR

(a) How can the comparative study made of the fore limbs of different mammals be considered an evidence for evolution?

(b) What are these compared limbs called and why?

(c) Name the kind of evolution it is a result of.
26. (a) Describe how DDT undergoes biological magnification.
(b) How does it cause a decline in bird populations? Explain.

OR

(a) Why is the pyramid of energy always upright? Explain.
(b) What are the limitations of ecological pyramids?