

## Model Test Paper (2026-2027)

Class–12<sup>th</sup>  
Biology

Time: 03Hrs

M.M – 60

### General Instructions:-

1. All questions are compulsory.
2. The question paper consists of four sections: A, B, C, and D.
3. Section A contains 12 multiple-choice questions of 1 mark each.
4. Section B contains 10 very short answer questions of 2 marks each.
5. Section C contains 6 short answer questions of 3 marks each.
6. Section D contains 2 long answer questions of 5 marks each.
7. Draw neat and labeled diagrams wherever necessary.

### SECTION-A

Choose the correct answer to the questions from given option.

1. The male gametophyte in flowering plants is:  
(A) Ovule (B) Embryo sac (C) Pollen grain (D) Anther
2. The embryonic stage during which implantation occurs is:  
(A) Morula (B) Gastrula (C) Blastocyst (D) Zygote
3. The transfer of an embryo with more than 8 blastomeres into the uterus is called:  
(A) GIFT (B) ZIFT (C) ICSI (D) ET
4. A man with AB blood group marries a woman with O blood group. Which blood groups are possible in their children?  
(A) A and B only (B) AB and O (C) A, B, AB and O (D) O only
5. DNA fingerprinting can help families by:  
(A) Determining paternity disputes (B) Changing genes  
(C) Increasing inheritance (D) Preventing mutations
6. Wings of butterfly and wings of bird are:  
(A) Homologous organs (B) Vestigial organs  
(C) Analogous organs (D) Rudimentary organs
7. Cyclosporin A is mainly used:  
(A) As an antibiotic (B) In lowering blood cholesterol  
(C) As An immunosuppressive agent (D) In alcohol fermentation
8. The vector used in plants for gene transfer is generally:  
(A) Ti plasmid (B) pBP322 (C) Cosmid (D) Phagemid
9. Match the following organisms with interactions:  

| Column I                   | Column II         |
|----------------------------|-------------------|
| (a) Cuscuta on hedge plant | (i) Mutualism     |
| (b) Lichen                 | (ii) Predation    |
| (c) Orchid on mango tree   | (iii) Parasitism  |
| (d) Tiger and deer         | (iv) Commensalism |

### OPTIONS:

- (A) a - (iii), b - (i), c - (iv), d - (ii)  
 (B) a - (i), b - (iii), c - (ii), d - (iv)  
 (C) a - (ii), b - (iv), c - (i), d - (iii)  
 (D) a - (iv), b - (ii), c - (iii), d - (i)

10. A person avoids wasting paper after learning about deforestation. Which ecosystem concern is directly reduced:

- (A) Habitat destruction (B) Nitrogen fixation  
 (C) Pollination (D) Food web formation

Question No. 11 and 12 consist of two statements Assertion (A) and Reaction (R). Answer these questions selecting the appropriate option given below:

- (A) Both A and R are true and R is the correct explanation of A  
 (B) Both A and R are true but R is not the correct explanation of A  
 (C) A is true but R is false  
 (D) A is false but R is true

11. Assertion (A):- People infected with AIDS should not be socially isolated.

Reason (R):- HIV spreads through casual contacts like hand shakes and sharing food.

12. Assertion (A):- Rosie was the first transgenic cow to make more nutritionally balanced milk for consumption by human babies.

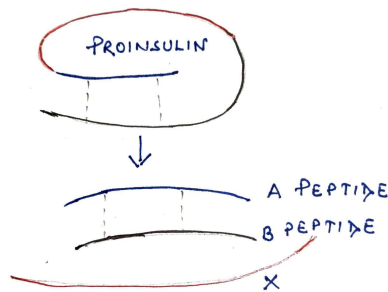
Reason (R):- The milk of Rosie cow contained human beta – lactalbumin which made the milk rich in protein.

### SECTION-B

13. What is triple fusion? Name the triploid structure formed as a result of this fusion in angiosperms.
14. Differentiate between a nucleoside and a nucleotide based on their structural components.
15. Distinguish between active immunity and passive immunity. Provide one standard example for each type.
16. Name the causative protozoan organism responsible for amoebic dysentery (amoebiasis) in humans. Mention any two symptoms of the infection.
17. Explain the significance of methanogenic bacteria like Methanobacterium in the anaerobic digestion phase of sewage treatment plants.
18. Amniocentesis is a valuable parental diagnostic technique, yet it faces a strict statutory ban for sex determination in India. Justify the socio-ethical necessity of this ban.
19. A family pedigree chart shows a genetic disorder where an affected male transmits the trait to all his sons, while none of his daughters show the trait or pass it on. Hypothesize the chromosomal location of this gene defect and explain your reasoning.
20. Given here are the interaction of populations of two different species assigning ‘+’ for beneficial interaction, ‘-’ for detrimental interaction and ‘O’ for neutral interaction. Based on these attributes write the names of the interactions between species A and B.

| Sr. No. | SPECIES A | SPECIES B |
|---------|-----------|-----------|
| 1       | +         | +         |
| 2       | -         | -         |
| 3       | +         | O         |
| 4       | +         | -         |

21.

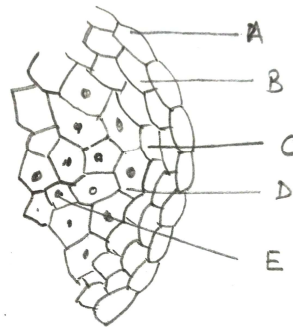


During the processing of proinsulin into mature human insulin, a specific polypeptide stretch is cleaved off. Identify the Segment 'X'. Which American company prepared two distinct DNA sequences corresponding to the A and B chains of human Insulin?

22. What are sacred groves? What is their role in conservation?

### SECTION-C

23.



Observe the diagram given above and

(A) Identify the parts labeled as A, B, C and D

(B) Which layer nourishes the developing pollen grains

24. A child is suffering from Down's syndrome.

(A) Mention the chromosomal cause & Karyotype.

(B) Write two symptoms of the disease.

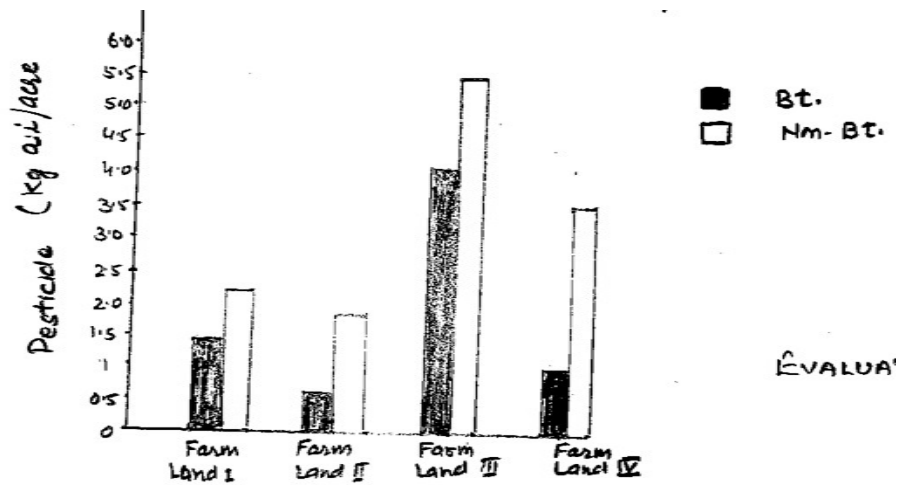
25. (A) Construct a complete transcription unit with promoter and terminator on the basis of the hypothetical template strand given below.



(B) Write the RNA strand transcribed from the above transcription unit along with its polarity.

26. Explain the concept of adaptive radiation using the classic example of Darwin's finches found in Galapagos islands. How does this phenomenon illustrate natural selection in response to different feeding niches?

27. GM crops especially Bt Crops are Known to have higher resistance to pest attacks. An experimental study was conducted in four different farm lands growing Bt and non Bt crops. The farmlands had the same dimensions, fertility and were under similar climatic conditions. The histogram below shows the usage of pesticides on Bt crops and non Bt crops in these farm lands:



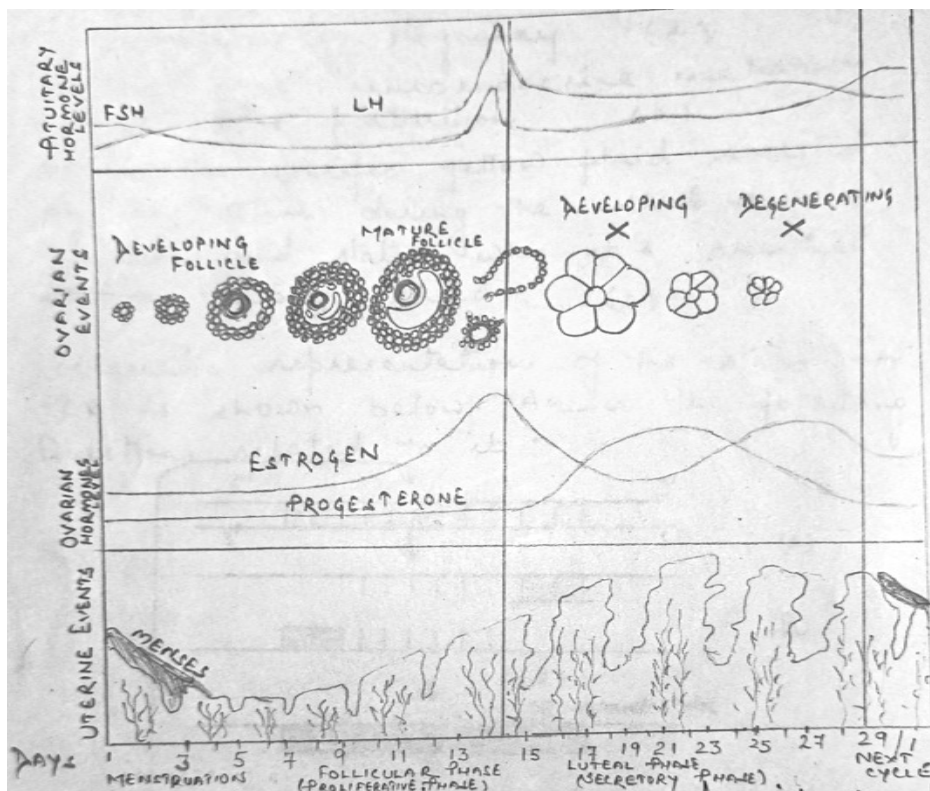
(A) Which of the above 4 farmlands has successfully applied the concept of biotechnology to show better management practices and use of agrochemicals? If you had to cultivate, which crop would you prefer (Bt or non Bt) and why?

(B) Cotton Bollworms were introduced in another experimental study on the above farmlands where no pesticides were used. Explain what effect would a Bt and non Bt crop have on the pest.

28. Define Ecological Pyramids and describe with examples, pyramids of number and biomass.

#### SECTION-D

29.



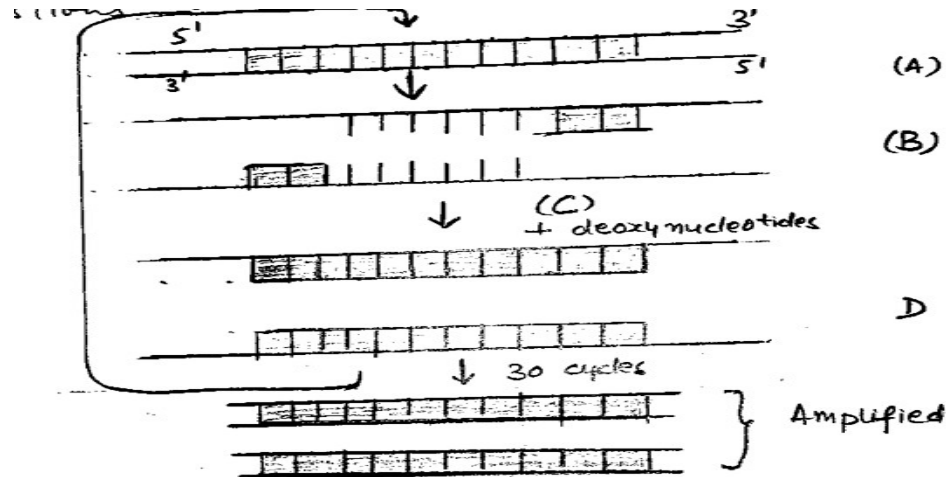
(A) Identify X. Which hormone does it secrete? If the hormone secreted by it is absent or low in level, will menstruation occur. Justify your answer.

- (B) The released ovum present in fallopian tube gets fertilized with sperm, how will it affect the menstrual cycle.
- (C) LH released by the pituitary gland becomes abnormally low at day 14. Explain its impact on ovulation.

OR

- (A) Explain the role of human chorionic gonadotropin (HCG) and progesterone in supporting and maintaining the uterine lining during 1<sup>st</sup> trimester of pregnancy.
- (B) Describe the neuroendocrine mechanism that initiates parturition.
- (C) Name the specific yellow fluid secreted by the mother during the initial day of lactation and state. Why is it essential for a newborn child.

30.

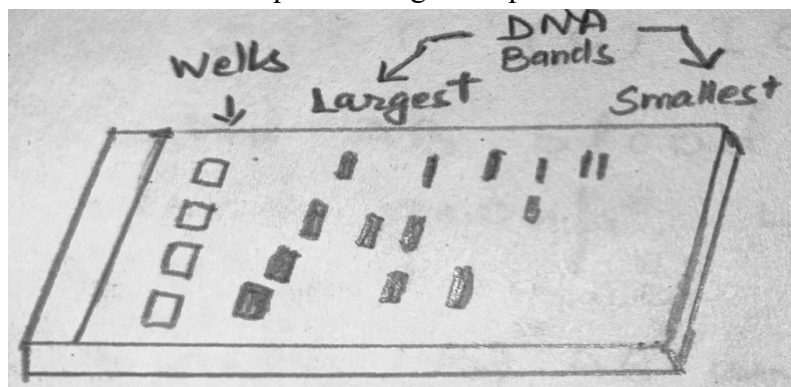


Schematic representation of the steps in PCR is shown below. Answer the following Questions related to it:

- (A) Name the steps A and D.
- (B) What is the function of PCR?
- (C) Identify B and what is its source organism.

OR

The following figure shows the result of a technique showing the separation of DNA.



- (A) Name the technique.
- (B) How are the separated DNA fragments visualized?
- (C) DNA fragments of size 500 bp, 1600 bp and 2000 bp are separated by the process. Which fragment will move farther and why?

Format of Design (Subject other than language)

Question Paper/Test

Subject: BIOLOGY

Unit/Paper: THEORY

Class: 12<sup>th</sup>

Time: 3 HRS.

Marks: 6

**Weightage to Objective**

| Objective  | Knowledge | Understand | Application | Analyses | Evaluation | Creation | Total |
|------------|-----------|------------|-------------|----------|------------|----------|-------|
| Percentage | 25%       | 18%        | 22%         | 18%      | 10%        | 7%       | 100%  |
| Marks      | 15        | 11         | 13          | 11       | 06         | 04       | 60    |

**Weightage to form of question:**

| Forms of Questions | E/LA | SA | VSA | O(MCQ) | Total |
|--------------------|------|----|-----|--------|-------|
| No. Of Questions   | 2    | 6  | 10  | 12     | 30    |
| Marks allotted     | 10   | 18 | 20  | 12     | 60    |
| Estimated Time     | 40   | 72 | 50  | 18     | 3 Hrs |

**Weightage to Major Content Areas:**

| S.No.        | Unit/Sub-Units           | Marks     |
|--------------|--------------------------|-----------|
| 1.           | REPRODUCTION             | 15        |
| 2.           | GENETICS & EVOLUTION     | 16        |
| 3.           | BIOLOGY IN HUMAN WELFARE | 08        |
| 4.           | BIOTECHNOLOGY            | 12        |
| 5.           | ECOLOGY                  | 09        |
| <b>Total</b> |                          | <b>60</b> |

|                     |                         |
|---------------------|-------------------------|
| Schemes of Sections | 4 SECTIONS (A, B, C, D) |
| Pattern of Options  | INTERNAL & EXTERNAL     |

|                             |           |           |
|-----------------------------|-----------|-----------|
| Estimated difficulty level: | Difficult | 35 %marks |
|                             | Average   | 40 %marks |
|                             | Easy      | 25 %marks |

**Index of Abbreviations:**

(E/LA: Essay/Long Answer; SA: Short Answer; VSA: Very Short Answer; O: Objective)

# FORMAT OF BLUEPRINT

Subject : BIOLOGY  
Unit/Paper : THEORY

Marks : 60

Class : 12<sup>th</sup>  
Time : 3 Hrs

| Sr.no | Objective<br>→              | Knowledge           |       |      |      | Understanding       |    |      |      | Application         |      |      |      | Analysis            |      |      |      | Evaluation          |      |      |       | Creation            |      |      |   | Total Row<br>Wise |
|-------|-----------------------------|---------------------|-------|------|------|---------------------|----|------|------|---------------------|------|------|------|---------------------|------|------|------|---------------------|------|------|-------|---------------------|------|------|---|-------------------|
|       | Form of Questio             |                     |       |      |      |                     |    |      |      |                     |      |      |      |                     |      |      |      |                     |      |      |       |                     |      |      |   |                   |
|       | Content Unit /Sub<br>Unit   | E/LA                | SA    | VSA  | O    | E/LA                | SA | VSA  | O    | E/LA                | SA   | VSA  | O    | E/LA                | SA   | VSA  | O    | E/L                 | SA   | VSA  | O     | E/LA                | SA   | VSA  | O |                   |
|       | Reproduction                |                     | 3(1)  | 2(1) | 3    |                     |    |      |      |                     |      | 2(1) |      | 5(1)                |      |      |      |                     |      |      |       |                     |      |      |   | 15                |
|       | Genetics &<br>evolution     |                     |       |      |      |                     |    | 2(1) | 1    |                     |      | 3(1) |      |                     |      | 3(1) |      | 1                   |      |      | 2(1)  |                     |      | 3(1) |   | 16                |
|       | Biology in human<br>welfare |                     |       |      | 2(1) |                     |    |      | 4(2) | 1                   |      |      |      | 1                   |      |      |      |                     |      |      |       |                     |      |      |   | 08                |
|       | Biotechnology               |                     |       |      |      |                     |    |      | 2(1) | 1                   |      | 5(1) |      |                     |      |      |      | 1                   |      | 3(1) |       |                     |      |      |   | 12                |
|       | Ecology                     |                     |       | 3(1) | 2(1) |                     |    |      |      |                     |      |      | 2(1) |                     |      |      |      | 1                   |      |      |       | 1                   |      |      |   | 09                |
|       | Sub Total                   |                     | 6 (2) | 6(3) | 3(3) | -                   | -  | 8(4) | 3(3) | 5(1)                | 3(1) | 4(1) | 1(1) | 5(1)                | 3(1) | -    | 3(3) | -                   | 3(1) | 2(1) | 1 (1) | -                   | 3(1) | -    | 1 | Marks(QS)         |
|       | Total Column<br>Wise →      | 15<br>(Marks total) |       |      |      | 11<br>(Marks total) |    |      |      | 13<br>(Marks total) |      |      |      | 11<br>(Marks total) |      |      |      | 06<br>(Marks total) |      |      |       | 04<br>(Marks total) |      |      |   | 60                |

Note: Figures within brackets to indicate the number of questions and figures outside the brackets to indicate marks.  
Denotes that marks have been combined to form one question.

Summary: Essay(E)/CBQ No. 02 Marks 10  
Short Answer(SA) No. 06 Marks 18  
Very Short Answer(VSA) No. 10 Marks 20  
Objective(O) No. 12 Marks 12

Patterns of Options INTERNAL & EXTERNAL  
Scheme of Sections A, B, C, D(4 SECTION)