

**Tripura Board**  
**Class XII**  
**Biology**  
**Sample Paper – 1**

**Time: 3 Hours 15 Mins**

**Total Marks: 70**

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**General Instructions:**

- i) There are a total of 30 questions in four sections in the question paper. All questions are compulsory.
  - ii) Section A contains questions number 1 to 8, very short answer type questions of 1 mark each.
  - iii) Section B contains question number 9-18, short answer type I questions of 2 marks each.
  - iv) Section C contains question number 19-27, short answer type II questions of 3 marks each.
  - v) Section D contains questions number 28-30, long answer type questions of 5 marks each
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**Section A**

- 1.** How does colostrum provide protection against diseases to newborn babies? [1]
- 2.** Name the Indian variety of rice patented by an American company. [1]
- 3.** State the function of pyrogens. [1]
- 4.** Name two cloning vectors. [1]
- 5.** What is a palindromic nucleotide sequence? [1]
- 6.** How is snow blindness caused in humans? [1]
- 7.** State the importance of biofortification. [1]
- 8.** Would it be appropriate to use DNA probes such as VNTR in DNA fingerprinting of a bacteriophage? [1]

**Section B**

**9.** What is terror of Bengal? [2]

**10.** What will be the genotypes of the parents if the offspring had phenotypes in the following proportion? [2]

(a) 9:3:3:1

(b) 1:1:1:1 (use the symbols Aa and Bb)

**11.** If the base sequence of one strand of DNA is CAT, TAG, TAC, GAC, what will be the base sequence [2]

(a) Of complementary DNA strand

(b) Of its complementary RNA strand

**12.** Name the infective stage of Plasmodium. Give any two symptoms of the disease caused by this pathogen. [2]

**Or**

RNA is the first genetic material. Highlight some facts and points about RNA.

**13.** *Bacillus thuringiensis* produces insecticidal protein. Why does this toxin not kill *Bacillus*? [2]

**14.** Draw a longitudinal section of a post-pollinated pistil showing the entry of the pollen tube into the mature embryo sac. Label the filiform apparatus, chalazal end, hilum antipodals, male gametes and secondary nucleus. [2]

**Or**

Draw a labelled sectional view of the seminiferous tubule of a human male.

**15.** Differentiate between spermatocytes and oocytes. [2]

**16.** During his studies on genes in *Drosophila* which were sex-linked, T. H. Morgan found that  $F_2$ -population phenotypic ratios deviated from the expected 9:3:3:1. Explain the conclusion he arrived at. [2]

**17.**

[2]

- (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.

**18.**

[2]

- (a) Sickle cell anaemia in humans is a result of point mutation. Explain.  
(b) Write the genotypes of both parents who have produced a sickle cell anaemic offspring.

### Section C

- 19.** How does the RNA interface help in developing resistance in tobacco plant against nematode infection? [3]

- 20.** Explain the differences between the seral stage and the climax community during succession [3]

- 21.** Describe various techniques used in the control of gaseous pollutants. [3]

- 22.** Explain mutualism with the help of any two examples. How is it different from commensalism? [3]

- 23.** Ram is managing a dairy firm. He has been advised to use artificial insemination to overcome several problems in developing better breeds of cow. Govind has advised him MOET for herd improvement. Ram is ignorant and is not able to decide. How will you help Ram regarding [3]

- (i) Which technique he should adopt?
- (ii) What is the procedure of the new technique?
- (iii) What is the advantage of this technique?
- (iv) What values are reflected in it?

- 24.** What do you understand by differential reproduction and reproductive isolation? In what context are these terms used? [3]

- 25.** Where are the Leydig cells present? What is their role in reproduction? [3]

26. What is meant by monosporic development of female gametophyte? [3]
27. Why is *Rhizobium* categorised as a 'symbiotic bacterium'? How does it act as a biofertiliser? [3]

**Section D**

24. Describe briefly the structure of a monocotyledonous albuminous (maize) seed. [5]

**Or**

Describe briefly the structure of the human ovum.

25. What will happen [5]
- (i) When complete sets of chromosomes are added to the diploid genome?
  - (ii) When individual chromosomes are added to or deleted from the diploid genome?
  - (iii) When a part of the chromosome is lost?
  - (iv) When a part of chromosome breaks and attaches to another non-homologous chromosome?
  - (v) When a part of the chromosome breaks and attaches to its homologue?

**Or**

Describe in brief the structure of transfer RNA.

- 26.
- (a) Explain primary productivity and the factors which influence it.
  - (b) Describe how do oxygen and chemical composition of detritus control decomposition. [5]

**Or**

- (a) Give the ecological adaptations of succulents.
- (b) Define the following terms:
  - (i) Mimicry
  - (ii) Acclimatisation
  - (iii) Ectotherms