SUBJECT: BIOLOGY (044)
PRACTICE PAPER - 2

Time allowed: 3 hrs. **Maximum Marks: 70**

General Instructions:

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question numbers 1 to 5, MCQ's of one mark each.
3. Section B contains question numbers 6 to 12, SA type-I questions of two marks each.
4. Section C contains question numbers 13 to 21, SA type-II questions of three marks each.
5. Section D contains question number 22 to 24, case based short answer type questions of three marks each.
6. Section E contains question numbers 25 to 27, LA type questions of five marks each.
7. There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of two marks, two questions 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. What is the number of chromosome in human zygote?
    a. 46
    b. 23
    c. 22
    d. 44
2. Which one is totipotent?
    a. Bone marrow
    b. Sperm
    c. Stem cells
    d. T-lymphocyte
3. Which one of the following is a palindrome sequence?
    a. GAATTC
    b. GAGTAT
    c. CGACGA
    d. AAAAAA

OR

i. A cross between F1 individual and a recessive homozygous parent is called as test cross.

ii. Mendel's factor is now called as gene.

iii. Masking effect of one gene on the expression of another gene is called as epistasis.

iv. A gene which affects more than one trait is called as pleiotropic gene.

a. FFTT

b. TFTF

c. FTFT

d. TTTT

4. Which one is example of Allen’s rule

a. Polar bear

b. Shark

c. Lichen

d. Moth

5. Based on the definition of NPP, chose the correct representation from the following?

a. NPP = GPP + RL

b. NPP =RL – GPP

c. NPP = NSP – GPP

d. NPP = GPP - RL

OR

Two different species cannot live for long in the same niche or habitat. This law is:

a. Allen's law

b. Gause's law

c. Weismann's theory

d. Competitive exclusion principle

SECTION - B

6. Write the transcription product sequence for

   a) 5'-ATGCACTGATCCAA-3'

   b) 3'-GTACGTACGTAC-5'

7. Complete the following regarding a typical cross:

   Monohybrid F1 phenotype : ----------

   1: 2: 1 : ----------,----------,----------

8. What are the types of acquired immunity?
9. Which microbe converts milk to curd? What is its role in medical industry?
10. Give some examples of diseases and their insect vectors.

OR

What are the different methods of breeding?

11. Give four characteristics of Genetic code?

OR

Give four factor which affect genetic equilibrium?

12. Explain emasculation?

SECTION - C

13. How was the genetic code elucidated?
14. Explain this equation $\mathbf{p^2 + 2pq + q^2 = 1}$ **?**
15. What are the different levels at which gene regulation can be achieved?
16. What are the primary lymphoid organs? Write a short note on it.
17. Explain gene therapy with an example.
18. Diagrammatically represent the replication of retrovirus.

OR

List the salient features of DNA double helix model.

19. What is the fate of the product of fertilization in humans?
20. How have cry proteins been utilized?

OR

Explain carbon cycle with diagram.

21. Explain two reasons for loss of biodiversity.

SECTION - D

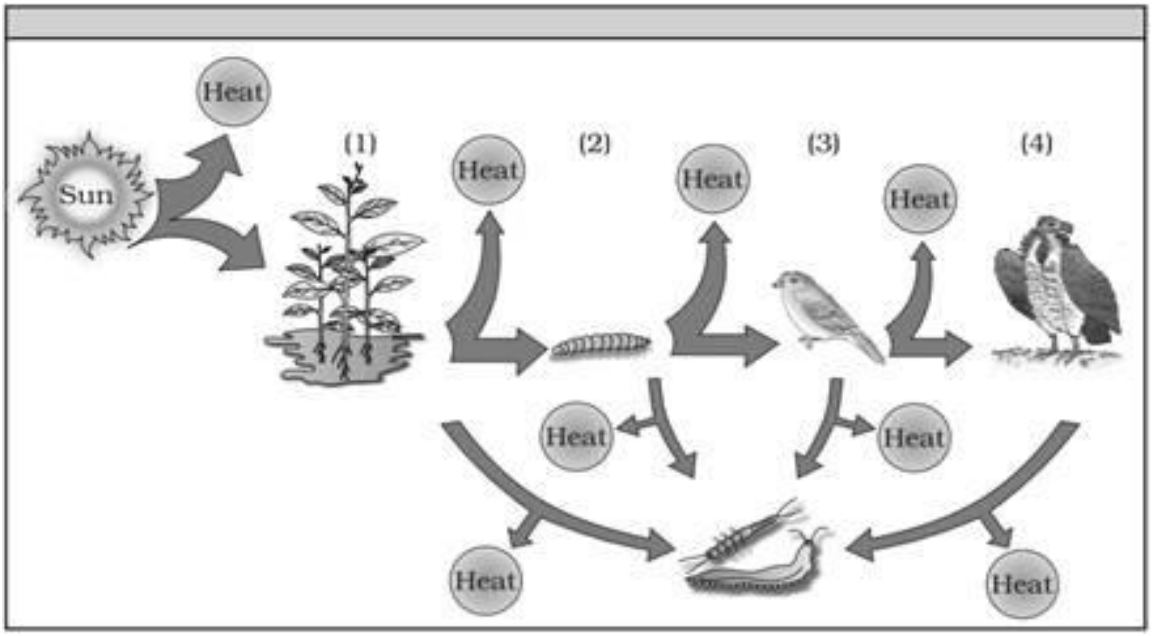
22. Give one adaptation each of animals that can survive high temperature in the desert ecosystem, aquatic ecosystem and cold ecosystem?

23.

a) What does the following picture represent?

b) Identify and name the labels -1,2,3,4?

c) What is represented by the arrows going down from the main sequence?



24. In art class, the teacher asked Puneet to mix green and yellow crayon colours and find out the combined colour formed. Puneet could not find the green colour crayon in his box. Upon being inquired by the teacher he showed the box and told that he is not having the required green colour. The teacher was surprised to notice that the box of colours contained the green crayon. To cross check his observations, teacher took a picture of multiple coloured dots and asked Puneet to identify the pattern which Puneet couldn't.

a) What kind of disorder did Puneet possess?

b) Did Puneet lack knowledge of colours? If not, give the biological reason for the same.

c) Give the technical term for this type of inheritance..

SECTION - E

25. Explain with diagram the experiment that proved that DNA is the genetic material.

OR

Explain how the pollination in angiosperms is aided by wind and water.

26. Explain the formation of sperm with a labeled diagram. Which hormones are involved in the process?

OR

Explain the technique of DNA fingerprinting with diagram.

27. What is parasitism? What are the types?

OR

What are ecosystem services?

****