SECOND YEAR HIGHER SECONDARY MARCH 2023
SAMPLE QUESTION PAPER
BOTANY

Maximum score: 30   Time: 1 Hour

PART- I

A. Answer any 3 questions from 1 to 5. Each carries 1 score   (3x1=3)

1. Cotyledon in grass embryo is called _____.
2. The DNA sequence that controls copy number of the linked DNA in the vector is termed as
   a) Selectable marker b) Recognition sequence c) Palindromic sequence
   d) Origin of replication
3. Name the first transgenic cow.
4. Which among the following is based on Antigen-Antibody interaction?
   a) ELISA   b) PCR   c) RNAi   d) Gene therapy
5. Observe the relationship between the first two terms and fill up the blanks.
   a) Lice on humans: Ecto Parasitism
   b) Parasitism by parasitic birds: _____

PART- II

B. Answer any 9 questions from 6 to 16. Each carries 2 score   (9x1=2)

6. Various events of pollen-pistil interaction are given below. Arrange them in correct sequence.
   - Entry of pollen tube into the ovule
   - Pollen deposition on the stigma
   - Recognition of compatible pollen grain
   - Pollen germination and pollen tube growth
7. In majority of angiosperms pollen grains are liberated at a 2-celled stage.
   a) Name the two cells
   b) Differentiate these two cells
8. The gene of interest can be amplified through PCR.
   a) Expand PCR
   b) Write its steps.
9. Identify the diagram and label A, B and C
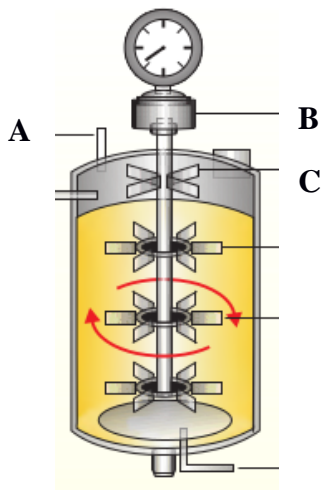
10. Match the following

Sl No	A	B
i	Gene therapy	Golden Rice
ii	cry I Ac	RNAi
iii	Vitamin A	ADA deficiency
iv	Silencing of mRNA	Cotton Boll worms

11. Alpha-1-antitrypsin and alpha -lactalbumin are two biological products from transgenic animals. Write the use these two biological products.
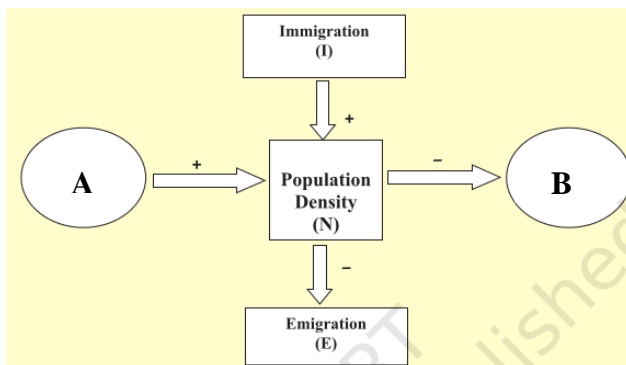12. Write the steps involved in the production of genetically engineered insulin.
13. Observe the graph given below.
    a) Name the growth pattern in 'A' and 'B'
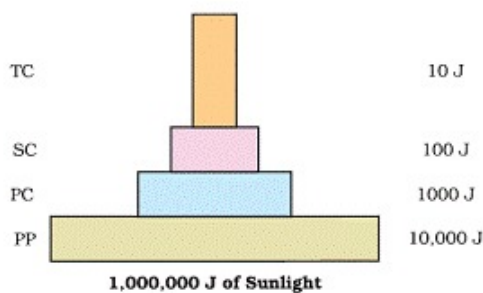   b) Define carrying capacity
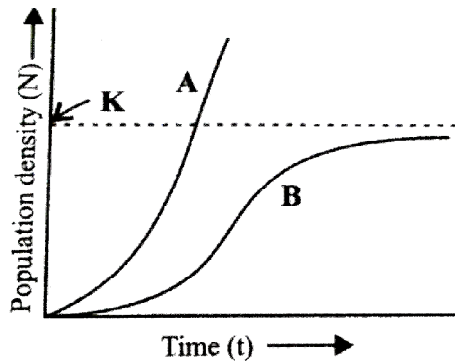
14. Observe the schematic representation given below.
    a) Identify A and B
    b) From the diagram how can we predict the change in population size?

15. The figure shows Pyramid of energy. Pyramid of energy is always upright. Why?

16. Rate of biomass production in an ecosystem is called productivity. Productivity is divided into GPP and NPP
    a) Expand GPP and NPP
    b) Write the equation relating GPP with NPP

PART- III

C. Answer any 3 questions from 17 to 20. Each carries 3 score   (3x3=9)

17. Based on the source of pollen grain self pollination may be autogamy or geitonogamy.
    a) Explain autogamy and geitonogamy
    b) Write any two devices to prevent self pollination
18. Recombinant DNA technology can be accomplished only if we have the following key tools
    a) Restriction enzymes
    b) Polymerase enzymes
    c) Cloning vectors
    State the functions of each one
19. Given below is a table showing inter specific interactions.

Species A	Species B	Interaction
+	+	Mutualism
+	0	A
-	-	B

    a) Identify the type of interaction 'A' and 'B'
    b) Name the interaction in which one species is harmed and other is neither benefited nor harmed.
    c) Define Gause's competitive exclusion principle with suitable example.
20. Breakdown of complex organic matter into inorganic substances by decomposers are called decomposition.
    a) Write the steps in decomposition
    b) Name the partially decomposed dark coloured amorphous substance formed during decomposition.

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