

Question Paper Code 57/2

SECTION A

Q.Nos. 1 - 8 are of 1 mark each.

1. **Mention any two significant roles predation plays in nature.**

Ans. 57/1 - 7

2. **Between amphibians and birds, which will be able to cope with global warming? Give reason.**

Ans. Birds - regulators

[$\frac{1}{2} + \frac{1}{2} = 1$ mark]

3. **Name the two types of cells in which the HIV multiplies after gaining entry into the human body.**

Ans. HIV enters - Macrophages,
Helper T lymphocytes

[$\frac{1}{2} + \frac{1}{2} = 1$ mark]

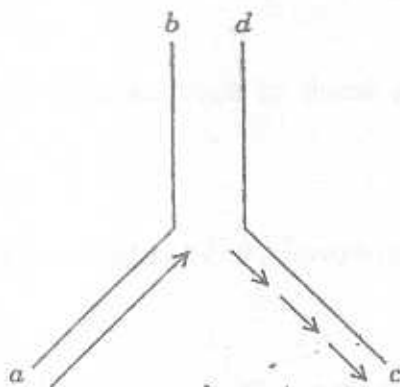
4. **Name any two vertebrate body parts that are homologous to human forelimbs.**

Ans. 57/1 - 1

5. **What was the speciality of the milk produced by the transgenic cow Rosie?**

Ans. 57/1 - 4

6. **Mention the polarity of the DNA strands a - b and c - d shown in the replicating fork given below.**



Ans. 57/1 - 6

7. **A multinational company outside India tried to sell new varieties of turmeric without proper patent rights. What is such an act referred to?**

Ans. Biopiracy.

[1 mark]

8. What is the economic value of *Spirulina* ?

Ans. 57/1 - 3

[1 mark]

SECTION B

Q.Nos. 9 - 18 are of 2 marks each.

9. A plant of *Antirrhinum majus* with red flowers was crossed with another plant of the same species with white flowers. The plants of the F_1 generation bore pink flowers. Explain the pattern of inheritance with the help of a cross.

Ans. 57/1 - 11

OR

A woman with blood group O married a man with AB group. Show the possible blood groups of the progeny. List the alleles involved in this inheritance.

Ans. 57/1 - 11

10. Certain species of wasps are seen to frequently visit flowering fig trees. What type of interaction is seen between them and why?

Ans. Mutualism = 1

Wasp uses the flower / fruit to lay her eggs / for oviposition // to use the seeds to nourish the larvae = $\frac{1}{2}$
Fig flowers get pollinated = $\frac{1}{2}$

[1 + $\frac{1}{2}$ + $\frac{1}{2}$ = 2 marks]

11. State the difference between the first trophic levels of detritus food chain and grazing food chain.

Ans. 57/1 - 13

12. How can DNA segments, separated by gel electrophoresis, be visualised and isolated ?

Ans. 57/1 - 15

13. Coconut palm is monoecious while date palm is dioecious. Why are they called so ?

Ans. 57/1 - 14

14. (a) Expand IUD.

(b) Why is hormone releasing IUD considered a good contraceptive to space children ?

Ans. 57/1 - 9

15. How do Darwin's finches illustrate adaptive radiation ?

Ans. 57/1 - 16

16. Why do sportspersons often fall a victim to cocaine addiction ?

Ans. 57/1 - 12

22. How does Darwin's theory of Natural Selection explain the appearance of new forms of life on earth ?

Ans. Variations occur in population of any species, some variations are heritable, helping the members to adapt and survive, They reproduce and nature selects such members, leading to the formation of new species, over many generations.

[6 x ½ = 3 marks]

23. How is the bacterium *Thermus aquaticus* employed in recombinant DNA technology ?

Ans. Bacterium *Thermus aquaticus* produces thermopolymerase called taq polymerase, to amplify DNA (in vitro), it is useful since it is thermostable.

[1x3=3marks]

OR

DNA being hydrophilic cannot pass through the cell membrane of a host cell. Explain how does recombinant DNA get introduced into the host cell to transform the latter.

Ans. Bacterial cells are treated with Ca^{++} , given a heat shock, DNA enters through the pores in the cell wall, =1.
Recombinant DNA is directly microinjected, =1.

Cells are bombarded with high velocity micro particles of gold / tungsten coated with DNA by gene gun=1.

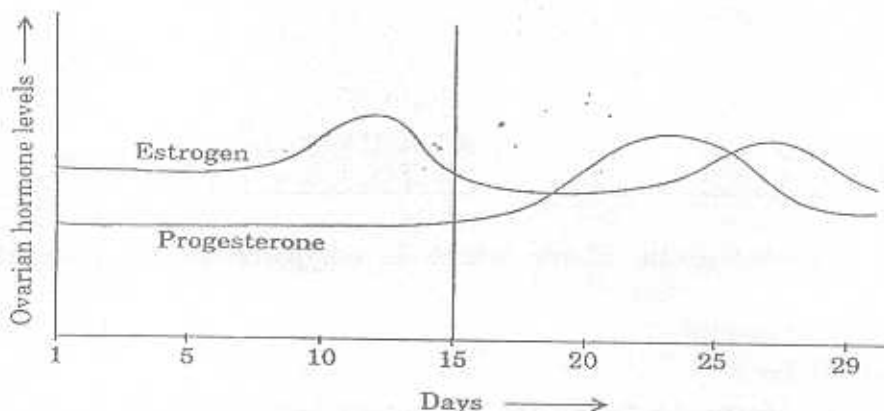
[1 × 3 = 3 marks]

24. A factory drains its waste water into the nearby lake. It has caused algal bloom.

- How was the algal bloom caused ?
- What would be the consequences ?
- Name the phenomenon that caused it.

Ans. 57/1 - 26

25. (a)



Read the graph given above and correlate the uterine events that take place according to the hormonal levels on

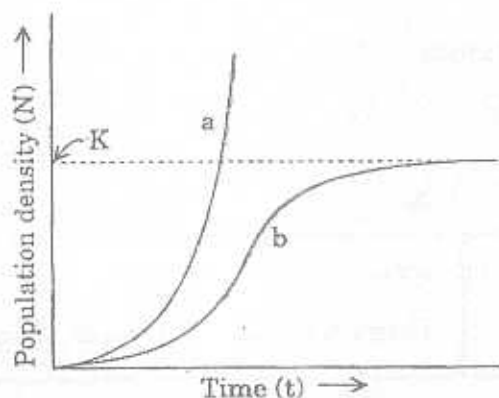
- 6-15 days
- 16 - 25 days
- 26 - 28 days (if the ovum is not fertilised)

Ans. 57/1 - 19

(b) Specify the sources of the hormones mentioned in the graph.

Ans. 57/1 - 19

26.



Study the population growth curves shown above.

- (i) Identify curves 'a' and 'b'
- (ii) Mention the conditions responsible for the curves 'a' and 'b' respectively.
- (iii) Give the necessary equation for the curve 'b'.

Ans. 57/1 - 22

27. Explain the role of baculoviruses as biological control agents. Mention their importance in organic farming.

Ans. 57/1 - 20

SECTION D

Q.Nos. 28 - 30 are of 5 marks each.

28. Explain the steps involved in the production of genetically engineered insulin.

Ans. 57/1 - 29

OR

- (a) Name the nematode that infests and damages tobacco roots.
- (b) How are transgenic tobacco plants produced to solve this problem ?

Ans. 57/1 - 29

29. A tall pea plant with yellow seeds (heterozygous for both the traits) is crossed with a dwarf pea plant with green seeds. Using a Punnett square work out the cross to show the phenotypes and the genotypes of F_1 generation.

Ans. Tall and yellow seeds \times Dwarf and green seeds
 $TtYy$ $ttyy = \frac{1}{2}$

Gametes	TY	Ty	tY	ty	$= \frac{1}{2} \times 4$
$ty = \frac{1}{2}$	TtYy Tall & Yellow	Ttyy Tall & Green	ttYy Dwarf & Yellow	ttyy Dwarf & Green	

4 Phenotypes & genotypes $= \frac{1}{2} \times 4$

[1+2+2=5 marks]

OR

- (a) Why is DNA molecule a more stable genetic material than RNA ? Explain.
 (b) "Unambiguous", "degenerate" and "universal" are some of the salient features of genetic code. Explain.

Ans. (a) DNA does not act as a catalyst, it is less reactive due to absence of $2' - OH$ group. //
 RNA has $2' - OH$ group - More reactive, it is a catalyst. $= 1+1 = 2$.

(b) "Unambiguous" as one codon codes for only one amino acid.

"Degenerate" because some amino acids are coded by more than one codon.

"Universal" because codons code for the specific amino acid no matter what the organism is.

$= 1 \times 3 = 3$

[2 + 3 = 5 marks]

30. (a) Draw a schematic labelled diagram of a fertilised embryo sac of an Angiosperm.
 (b) Describe the stages in embryo development in a dicot plant.

Ans. 57/1 - 28

OR

- (a) Draw a labelled diagram of a sectional view of human seminiferous tubule.
 (b) Differentiate between gametogenesis in human males and females on the basis of
 (i) time of initiation of the process.
 (ii) products formed at the end of the process.

Ans. 57/1 - 28