Senior Inter Botany Model Paper

Paper - II

Time: 3 Hours **Max. Marks: 60**

SECTION - A

(10 × 2 = 20)

Note: Answer **all** questions. Each answer may be limited to **5** lines.

1. Name two elements whose symptoms of deficiency first appear in younger leaves.

2. What is the primary acceptor of CO_2 in C_3 plants? What is the first stable compound formed in the Calvin cycle?

3. What is lysozyme and what is its function?

4. What will be the phenotypic ratio in the offsprings obtained from the following crosses?

a) Aa x aa b) AA x aa

c) Aa x Aa d) Aa x AA

Note: *Gene 'A' is dominant over gene 'a'*

5. Distinguish between heterochromatin and euchromatin. Which of the two is transcriptionally active?

6. Given below is the sequence of coding strand of DNA in a transcription unit.

5'A A T G C A G C T A T T A G G-3'

Write the sequence of:

a) Its complementary strand.

b) The mRNA.

7. Give different types of cry genes and pests which are controlled by the proteins encoded by these genes.

8. Name the nematode that infects the roots of tobacco plants. Name the strategy adopted to prevent this infestation.

9. Why does 'Swiss cheese' have big holes? Name the bacteria responsible for it.

10. Name an immunosuppressive agent. From where it is obtained?

SECTION - B

(6 × 4 = 24)

Note: Answer any six questions. Answer may be limited to 20 lines

11. "Transpiration is a necessary evil". Explain.

12. Explain the mechanism of opening and closing of stomata.

13. Write briefly about enzyme inhibitors.

14. What are the physiological processes that are regulated by ethylene in plants?

15. How are bacteria classified on the basis of number and distribution of flagella?

16. Mention the advantages of selecting pea plant for experiment by Mendel.

17. How many types of RNA polymerases exist in cells? Write their names and functions.

18. What is a bio-reactor? Describe briefly the stirring type of bio-reactor.

SECTION - C

(2 × 8 = 16)

Note: Answer any two questions. Answer may be limited to 60 lines

19. Give an account of glycolysis. Where does it occur? What are the end products? Trace the fate of these products in both aerobic and anaerobic respiration.

20. Give a brief account of the tools of recombinant DNA technology.

21. You are a Botanist working in the area of plant breeding. Describe the various steps that you will undertake to release a new variety.

Answers for 2 Marks Questions

1. Calcium and Sulphur.

2. Ribulose bisphosphate is the primary acceptor.
3-Phosphoglyceric acid is the first stable compound.

3. Lysozyme is a hydrolytic enzyme. It dissolves plasma membrane of the host cell while releasing the phage particles during lytic cycle.

4. a) Dominant: Recessive = 1:1
b) All are dominant
c) Dominant: Recessive = 3:1
d) All are dominant

5. Densely packed and dark stained chromatic regions are called Heterochromatin. Loosely packed light stained regions are called Euchromatin. Euchromatin is transcriptionally active.

6. a) 3'T T A C G T C G A T A A T C C-5'

(or)

5'C C T A A T A G C T G C A T T-3'
b) 5'AAUG C AGCUAUUAG G-3'

7. Different types are cryIAc, cry IIAb and cry IAb.
cryIAc, cryIIAb control the cotton bollworms.

8. Meloidogyne incognita.
RNA interference.

9. Big holes develop due to production of large amounts of CO_2.
Propionibacterium sharmanii.

10. Cyclosporine A.
From fungus Trichoderma polysporum.