

Total Marks: 75

Duration: 2 1/2 hrs

N.B:1. All questions are compulsory.

2. Figures to the right indicate marks.

3. Draw neat and labeled diagrams wherever necessary.

- Q.1)** (A) How can genetic engineering help in control the pests in agricultural? (7)
OR
(A) Explain the importance of Golden Rice. (7)
(B) Explain how the genetic engineering of the gene nitrogenase is carried out. (8)
OR
(B) What is flavr Savr? What are its advantages over normal variety? (8)
(C) **Attempt any ONE of the following:** (5)
(i) Write a short note on Dolly.
(ii) What are vectors? Explain the use of plasmids as vectors.
- Q.2)** (A) What are stem cells? Give an account of their various applications. (7)
OR
(A) What are lycopene? Discuss the health benefits of the same. (7)
(B) Discuss the production of recombinant insulin. (8)
OR
(B) Justify: Stem cells are classified based on their differentiation capacity. (8)
(C) **Attempt any ONE of the following:** (5)
(i) Schematically represent production of human growth hormone.
(ii) How do antioxidants help in preventing oxidative stress?
- Q.3)** (A) What is Pharmacogenomics? Add a note on personalized medicines. (7)
OR
(A) Write a short note on goals and content of HGP. (7)
(B) Give a detailed account of genetic counseling. (8)
OR
(B) Discuss ethical and social issues associated with HGP. (8)
(C) **Attempt any ONE of the following:** (5)
(i) Describe biochemical genetic testing using a suitable example.
(ii) What are the indications for genetic testing?
- Q.4)** **Attempt Any THREE of the following:** (15)
(i) Write a short note on Transgenic Fish.
(ii) Explain the retroviral vector method for generation of transgenic mice.
(iii) State the different properties of stem cells.
(iv) Discuss the different food sources of anthocyanins and bioflavonoids.
(v) What is amniocentesis? Write briefly about cytogenetic tests used for prenatal diagnosis.
(vi) Discuss the benefits of HGP.