3 (Sem–6/CBCS) BOT HC 2

2024

BOTANY

(Honours Core)

Paper : BOT–HC–6026

(Plant Biotechnology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Fill in the blanks : 1×7=7

   (a) _____ discovered totipotency.

   (b) A single strand of nucleic acid tagged with a radioactive molecule is called a _____.

   (c) The element _____ provides a very stable ultra-low temperature environment.

(d) _____ is a type of hybrid that contains a lambda phage cos sequence.

(e) A _____ is a collection of DNA fragments that have been cloned into vectors.

(f) The basic target of _____ is a living cell.

(g) _____ genes are used to track the physical location of a segment of DNA.

2. Answer the following questions very briefly : 2×4=8

(a) What are cloning vectors ?

(b) What is the principle of totipotency ?

(c) What are the applications of somatic embryogenesis in plant tissue culture ?

(d) Mention the types and uses of microinjection.

3. Answer ***any three*** of the following : 5×3=15

(a) What do you mean by colony hybridization ? Mention its practical applications.

(b) Write a note on industrial enzymes.

(c) Where is linear DNA found ? What are the advantages of linear DNA over circular DNA ?

(d) What is the difference between androgenesis and gynogenesis ? What do you mean by direct androgenesis ?

(e) Write a note on Ti plasmid.

4. Answer ***any three*** of the following : 10×3=30

(a) Write about various types of reporter genes with their applications.

(b) What do you mean by primary and secondary metabolites ? How can biotechnological approaches enhance the production of secondary metabolites ?

(c) Give an account on transgenic crops with improved quality traits.

(d) What are restriction enzymes ? Mention the specific properties of various types of restriction enzymes, alongwith their importance for recombinant DNA technology.

(e) Differentiate between genomic DNA and cDNA libraries. Discuss about the construction of genomic library.

(f) Discuss eleborately various steps involved in plant tissue culture.
