(i) Printed Pages : 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 4 7 4

Exam. Code : 0 0 0 5

B.A./B.Sc. (General) 5th Semester

(2123)

BIOTECHNOLOGY

Paper : Plant and Animal Biotechnology

(BIOT-Elect-Sem-V-T)

Time Allowed : Three Hours] [Maximum Marks : 75

Note :— Attempt **five** questions in all by selecting **two** questions from each Section–A and B. Section–C is compulsory. All questions carry equal marks.

SECTION—A

1. (a) Define Micropropagation. Discuss the stages of micropropagation, its advantages and disadvantages. 8

   (b) What do you understand by somaclonal and gametoclonal variations ? Why do they occur and mention its advantages and disadvantages ? 7

2. (a) Discuss the various methods of protoplast isolation, their selection and viability testing. 8

   (b) Why are somatic hybrids developed and stages of somatic hybrids ? Give the methods of somatic hybridization and their applications. 7

3. (a) Discuss the molecular mechanism of T-DNA transfers into plants using *Agrobacterium tumefaciens*. 8

(b) Discuss the various plasmid vectors designed for plant transformation. 7

4. (a) How are plants genetically manipulated for virus and pest resistance ? 8

(b) Discuss the development of herbicide phosphoinothrocin resistant plants. 7

SECTION—B

5. (a) Describe the various equipment and media requirement for animal cell culture. 8

(b) What do you understand by anchorage dependence and how cells in culture respond to it ? 7

6. (a) How is monolayer culture established and how are they different from suspension culture ? 7.5

(b) How are gene banks established ? 7.5

7. (a) How does cell differentiation takes place in cultures cell properties retained ? 7

(b) Discuss why large scale production of animal cells cultures required and give any one method of its production. 8

8. (a) Discuss the process of transformation in animals and mention the applications of transgenic animal. 8

(b) Discuss the applications and problems of stem cell therapy. 7

SECTION—C

(Compulsory Question)

9. Write in brief :

(i) Cybrids and their application.

(ii) Embryo and endosperm culture.

(iii) Role of vir genes.

(iv) What is contact inhibition ?

(v) Types of stem cells. 5×3