

**2 0 1 8**

( 6th Semester )

**BOTANY**

TWELFTH PAPER

**( Plant Biotechnology and Experimental Embryology )**

*Full Marks : 55*

*Time : 2½ hours*

**( PART : A—OBJECTIVE )**

*( Marks : 20 )*

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

SECTION—A

*( Marks : 5 )*

Tick (✓) the correct answer in the brackets provided :

1×5=5

**1.** The first restriction endonuclease isolated from an 'R' strain of *Escherichia coli* is

(a) *Bam*HI ( )

(b) *Fok*I ( )

(c) *Hind*III ( )

(d) *Eco*RI ( )

**2.** Enzyme that allows the synthesis of DNA from an RNA template is called

- (a) RNA polymerase ( )
- (b) Restriction endonuclease ( )
- (c) Reverse transcriptase ( )
- (d) DNA polymerase ( )

**3.** Cryopreservation of tissue with liquid nitrogen is done at which temperature?

- (a)  $-196\text{ }^{\circ}\text{C}$  ( )
- (b)  $-126\text{ }^{\circ}\text{C}$  ( )
- (c)  $-206\text{ }^{\circ}\text{C}$  ( )
- (d)  $-96\text{ }^{\circ}\text{C}$  ( )

**4.** Which of the following is known as 'FlavrSavr'?

- (a) Specific variety of pesticide ( )
- (b) Golden rice ( )
- (c) Transgenic tomato ( )
- (d) Transgenic cotton ( )

**5.** Which of the following is the most commonly used method for the culture of plant protoplasts?

- (a) Bead culture ( )
- (b) Agar embedded culture ( )
- (c) Feeder layer technique ( )
- (d) Hanging drop method ( )

SECTION—B

( Marks : 15 )

Write notes on the following :

3×5=15

1. Methylase
2. Reporter gene in plants
3. Macronutrients of MS medium
4. Plantibodies
5. Cybrid

( PART : B—DESCRIPTIVE )

( Marks : 35 )

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

1. Define PCR. Explain the steps of PCR with diagram.

2+5=7

**OR**

Write notes on the following :

3½+3½=7

- (a) Cloning vectors
- (b) Ligases

2. Describe the enzymes used in molecular cloning.

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**OR**

Write notes on the following :

3½+3½=7

- (a) Gene gun
- (b) *Agrobacterium*-mediated transformation in plants

3. What are explants? Describe the factors considered for the selection of explants. 2+5=7

**OR**

Write notes on the following : 3½+3½=7

(a) Cryopreservation

(b) Totipotency

4. Describe the role of biotechnology in agriculture. 7

**OR**

Write notes on the following : 3½+3½=7

(a) *Bt* cotton

(b) Golden rice

5. What is micropropagation? Mention the advantages and disadvantages of micropropagation. 2+5=7

**OR**

Write notes on the following : 3½+3½=7

(a) Isolation of protoplasts

(b) Embryo culture

★ ★ ★