



**RX-003-001621**

Seat No. \_\_\_\_\_

**Third Year B. Sc. (Sem. VI) (CBCS) Examination**

**March - 2019**

**Biotechnology : BT-601**

*(Principles of Biotechnology Applied to Plants & Animals)*

*(Old Course)*

**Faculty Code : 003**

**Subject Code : 001621**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**SECTION - I**

**1 All questions are compulsory and carry equal marks : 1×20=20**

- (1) Undifferentiated mass of cell is termed as \_\_\_\_\_.  
(Fill in the blank)
- (2) Gottlieb Haberlandt is regarded as father of plant tissue culture. (True/False)
- (3) Auxins are generally used in including rooting in shoots. (True/False)
- (4) Chemical \_\_\_\_\_ can be used for sterilization of explant. (Fill in the blank)
- (5) For isolation of plant protoplast generally we use \_\_\_\_\_ enzyme. (Fill in the blank)
- (6) Give any one example of cytokinin.
- (7) Somatic embryos can be used in preparation of artificial seeds. (True/False)
- (8) Chemical \_\_\_\_\_ can be used in fusion of protoplast. (Fill in the blank)
- (9) During culturing, at \_\_\_\_\_ growth phase of cells, the maximum accumulation of secondary metabolites can be observed. (Fill in the blank)
- (10) BT Cotton is mainly resistant against \_\_\_\_\_ insect. (Fill in the blank)

- (11) Meristem tip culture can be used for elimination of virus. (True/False)
- (12) During culturing of animal cell, \_\_\_\_\_ concentration of CO<sub>2</sub> is recommended?
- (13) Define 'Established Cell Line' in animal cell culture.
- (14) The range of optimum glucose concentration in the animal tissue culture media is \_\_\_\_\_ mmol/litre.
- (15) Write any one toxic effect of higher dissolved oxygen concentration in animal tissue culture medium.
- (16) \_\_\_\_\_ is the most commonly used protease to disaggregate the animal tissue.
- (17) How the toxicity due to ammonia accumulation is overcome during animal cell culture?
- (18) Name any two plant propagules which can be used as starting material to prepare synthetic seeds.
- (19) Polio vaccine was developed first of all through animal cell culture. (True/False)
- (20) What is the effect of excess accumulation of lactate on animal cells during culture condition.

## SECTION - II

- 2** (a) Answer any three questions out of following six : **2×3**
- (i) What do you understand by explant ? Explain with suitable example.
  - (ii) Write the significant contribution of any Indian scientist in development of plant tissue Culture science.
  - (iii) Write the main stages of micropropagation.
  - (iv) Mention only the main components of plant tissue culture medium.
  - (v) Describe any two differences between natural and synthetic animal tissue culture medium.
  - (vi) Mention any two characteristic of cell lines with examples.

- (b) Answer any three questions out of following six : **3×3**
- (i) Why hardening and acclimatization in plant tissue culture is required? Describe its two importance.
  - (ii) Mention any three important discoveries in the history of plant tissue culture.
  - (iii) Write three difference between diploid and transformed cell line?
  - (iv) Mention any three important discoveries in the history of plant tissue culture.
  - (v) Discuss any three methods of tissue disaggregation.
  - (vi) Discuss any two visual markers with examples which can be used to select the true hybrid from the population of fused and unfused protoplast.

- (c) Answer any two questions out of given five : **5×2**
- (i) Explain the structure of Ti plasmid of Agrobacterium with suitable diagram and give the detail of the role of its various coding sequence.
  - (ii) Give the factors affecting protoplast isolation. Describe the enzymatic method of protoplast isolation in detail.
  - (iii) What do you understand by incineration. Write a detailed note on explant sterilization done in plant tissue culture.
  - (iv) What do you understand by in vitro fertilization? Give the details of methodology of in vitro fertilization.
  - (v) Give a detailed account of biological method of transformation in animal cell.

- 3** (a) Answer any three questions out of following six : **2×3**
- (i) Name at least three macronutrient which are added in plant tissue culture medium. What effect will be caused by deficiency of manganese in plant culture medium?
  - (ii) Describe HEPA filters.

- (iii) What do you understand by clean area in tissue culture lab?
  - (iv) What is the role of Auxins in plant tissue culture?
  - (v) Write two landmark discoveries in the history of animal cell culture.
  - (vi) What do you understand by BSS in animal cell culture medium. Write the role of BSS in cell culture.
- (b) Answer any three questions out of following six : **3×3**
- (i) Compare somatic embryogenesis versus gametic embryogenesis.
  - (ii) Explain biotransformation in reference to secondary metabolite production with suitable example.
  - (iii) Define elicitors. How elicitation is different from biotransformation.
  - (iv) Write short note on microinjection.
  - (v) Write three important applications of animal cell culture.
  - (vi) Write short note on 'edible vaccines'.
- (c) Answer any two questions out of given five : **5×2**
- (i) Describe in detail physical and chemical method of protoplast fusion.
  - (ii) Give a detailed account of continuous cell line.
  - (iii) Write the main steps of transgenic plant development. Give an account of Bt cotton.
  - (iv) Describe and discuss lay-out plan for a large-sized plant tissue culture facility.
  - (v) Compare and contrast upon plant and animal tissue culture medium.
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