DCI-003-2016041 Seat No. _____

B. Sc. (Sem. VI) (CBCS) (W.E.F. 2019) Examination

July - 2022

BT-601 : Principles of Biote. Applied to Plant & Animals

Faculty Code : 003

Subject Code : 2016041

Time : **2:30** Hours] [Total Marks : **70**

1 (A) Objective type questions. **4**

(i) _____ is the most common and routinely used growth medium in PTC. (Fill in the blank)

(ii) Gregor Mendel is regarded as father of plant tissue culture. (True/False)

(iii) Auxin induce rooting in *in vitro* grown shoots. (True/False)

(iv) _____ process of sterilization involves use of moist heat and pressure for killing the microbes. (Fill in the blank)

(B) Answer in brief. (any 1 out of 2) **2**

(i) Define explant with suitable example.

(ii) Define callus and write its one application.

(C) Answer in detail. (any 1 out of 2) **3**

(i) Write three historic developments in the history of plant tissue culture.

(ii) Write mode of any three chemical sterilizer in killing microbes.

(D) Write a note on : (any 1 out of 2) **5**

(i) Role of macronutrients in development of plants.

(ii) Role of PGRs under *in vitro* and *in vivo* conditions.

2 (A) Objective type questions. **4**

(i) Suppose you want to develop haploid line of plants through tissue culture. Which part of plant will be your choice for establishment?

(ii) Cellulase enzyme is used in protoplast fusion. (True/False)

(iii) Name any two chemicals which can be used to fuse the protoplast.

(iv) Define Karyoplast

(B) Answer in brief. (any 1 out of 2) **2**

(i) Write any two differences between symmetric and asymmetric hybrids.

(ii) Write two differences between one step and sequential method of enzymatic isolation of protoplast.

(C) Answer in detail. (any 1 out of 2) **3**

(i) Describe complementation strategy to select true hybrids from a mixture of population.

(ii) Write three applications of synthetic seed technology.

(D) Write a note on. (any 1 out of 2) **5**

(i) Somaclonal variations during tissue culture.

(ii) Anther and pollen culture for haploid production.

3 (A) Objective type questions. **4**

(i) *Agrobacterium tumefaciens* causes which diseases in dicot plant.

(ii) A plantibody is an antibody that is produced by plants that have been genetically engineered with animal DNA encoding a specific human antibody known to neutralize a particular pathogen or toxin. (True/False)

(iii) Particle gun method is a direct method of genetic transformation in plant. (True/False)

(iv) t-DNA region of Ti plasmid contains genes for opine catabolism. (True/False)

(B) Answer in brief : (any 1 out of 2) **2**

(i) Enlist the coding region present on Ti plasmid and their main role.

(ii) Write two disadvantages of microinjection method for transformation in plant.

(C) Answer in detail : (any 1 out of 2) **3**

(i) Describe edible vaccines in brief with suitable example.

(ii) Write three applications of plant tissue culture.

(D) Write a detailed note on : (any 1 out of 2) **5**

(i) Principle and methodology of production of BT cotton.

(ii) Bioreactor for cell culture techniques.

4 (A) Objective type questions. **4**

(i) Toxicity due to accumulation of ammonia can be overcome by substituting glutamine by _____. (Fill in the blank)

(ii) The concentration of CO_2 is maintained at 5 - 10% range in CO_2 incubator during culturing the animal cells. (True/False)

(iii) Glutamine is nitrogen donor in animal cell culture medium. (True/False)

(iv) Trypsinization is carried out in animal cell culture for separation of cells. (Ture/False)

(B) Answer in brief. (any 1 out of 2) **2**

(i) Write two important roles of BSS in animal cell culture.

(ii) Write any two major advantages of adding serum in animal cell culture medium.

(C) Answer in detail. (any 1 out of 2) **3**

(i) Write the major six components of animal cell culture medium with its role.

(ii) Write a note on synthetic media.

(D) Write a note on. (any 1 out of 2) **5**

(i) "Regulation of pH in CO_2 incubator is required for better growth of cell in culture." Explain the principle and methodology and justify.

(ii) Five major historical developments in Animal cell culture.

5 (A) Objective type questions. **4**

(i) Write the function of t-PA.

(ii) When a female produces multiple egg, the condition is termed as superovulation. (True/False)

(iii) When the DNA is encapsulated with lipid molecules for transformation in animal cell, the technique is called as _____ (Fill in the blank)

(iv) Polio vaccine was developed first of all at commercial scale through animal cell culture. (True/False)

(B) Answer in brief. (any 1 out of 2) **2**

(i) Write two reasons for considering viruses an important biological agent for transformation in animal cells.

(ii) Write two advantages of in vitro fertilization.

(C) Answer in detail. (any 1 out of 2) **3**

(i) Write the three applications of cell lines.

(ii) Describe the cloning methods of cell line.

(D) Write a detailed note on. (any 1 out of 2) **5**

(i) Primary culture and secondary culture in animal culture system

(ii) Transgenic animal.
