AT–418

B.Sc. (Part–III) Semester—VI Examination

6S : INDUSTRIAL MICROBIOLOGY

(Tissue Culture and Industrial Waste Management)

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) **All** questions are compulsory.
(2) Draw neat and labelled diagrams wherever necessary.

1. (A) Fill in the blanks :
   (i) Intrinsic bioremediation is also called as _____ bioremediation.
   (ii) Long form of IAA is _____.
   (iii) _____ is fruit ripening hormone.
   (iv) _____ is the unorganised mass of cells. 2

   (B) Choose the correct alternative :
   (i) Oxidation pond is used for _____ treatment of sewage.
      (a) Primary (b) Secondary
      (c) Tertiary (d) Quaternary
   (ii) Part of a plant used for culturing is called as _____.
      (a) Inplant (b) Primary culture
      (c) Continuous culture (d) Explant
   (iii) The term 'Bt' is derived from the name of _____.
      (a) Plant (b) Bacteria
      (c) Fungi (d) Animal
   (iv) GMO stands for _____.
      (a) Genetically modified organs
      (b) Genetically modified organisms
      (c) Genetically manufactured organs
      (d) Genetically manufactured organisms 2

(C) Answer in **one** sentence each :

(i) What is microinjection ?

(ii) Name any one enzyme most commonly used for separating cells.

(iii) What is particle gun ?

(iv) Define contact inhibition. 4

2. (A) Describe in detail serum free growth medium and its chemical and physical properties. 12

OR

(B) Describe in detail mechanical and enzymatic disaggregation methods of cell culture. 12

3. (A) Describe the composition of plant tissue culture media and the role of each component with respect to plant growth. 12

OR

(B) Give an account of equipment and other requirements for the establishment of plant tissue culture in laboratory. 12

4. Explain :

(A) Methods of protoplast isolation 4

(B) Protoplast regeneration 4

(C) Agrobacterium mediated gene transfer. 4

OR

(D) Applications of somatic hybridization 4

(E) Protoplast culture 4

(F) Transgenic plant. 4

5. Describe :

(A) Factors affecting composting process 4

(B) Activated sludge treatment 4

(C) Sanitary landfills. 4

OR

(D) Trickling filter 4

(E) Physical treatment methods for industrial effluents 4

(F) Composition of sewage. 4

6. Explain :

(A) Copper biolcaching 4

(B) Types of bioremediation 4

(C) Degradation of petroleum products. 4

OR

(D) Bioremediation by genetically engineered microbes 4

(E) Ex situ bioremediation 4

(F) Metal recovery. 4

7. Describe :

(A) Funding agencies 4

(B) Patent 4

(C) Project preparing and subsidy. 4

OR

(D) Steps for patenting the product 4

(E) Production feasibility 4

(F) DBT as agency for financial assistance. 4