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

6S : INDUSTRIAL MICROBIOLOGY

(Tissue Culture and Industrial Waste Management)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All questions are compulsory.

(2) Draw diagrams wherever necessary.

1. (A) Fill in the blanks :— 2

(i) Chemically biogas is _____.

(ii) Superbug created by rDNA technology is used for bioremediation of _____.

(iii) A plant cell without cell wall is known as _____.

(iv) In bioremediation process _____ are used for removal of pollutants from the environment.

(B) Choose the correct alternative :— 2

(i) _____ is the capacity of plant cell to develop into whole plant.

(a) Micropropagation (b) Totipotency

(c) Microcloning (d) Macrocloning

(ii) _____ is commonly used for leaching of metals.

(a) Methallobacillus (b) Thiobacillus

(c) Lactobacillus (d) Tetrabacillus

(iii) Endosulfan is an example of _____.

(a) Pesticide (b) Fungicide

(c) Bactericide (d) Viricide

(iv) Genetically engineered pseudomonas species is involved in degradation of _____.

(a) Metals (b) Petroleum hydrocarbon

(c) Carbon dioxide (d) Amino acids

(C) Answer in **ONE** sentence each :— 4

(i) Which microscope is used for visualization of animal cell culture ?

(ii) Define cryopreservation.

(iii) What is callus culture ?

(iv) What is the long form of CSIR ?

2. (a) Discuss organ culture in brief. 4

(b) Explain primary explant technique in brief. 4

(c) Describe cell culture product. 4

OR

(d) Explain mechanical method of disaggregation. 4

(e) Describe continuous cell line. 4

(f) Discuss culture media for animal cell. 4

3. (a) Explain culturing technique for callus culture. 4
(b) Describe shoot regeneration in brief. 4
(c) Describe different media used in tissue culture. 4

OR

(d) Explain regeneration by somatic embryogenesis. 4
(e) Discuss embryo culture. 4
(f) Explain ovary culture. 4

4. (a) Explain protoplast fusion. 4
(b) Describe biotic stress. 4
(c) Write short note on transgenic plant. 4

OR

(d) Explain improvement of crop yield and quality in brief. 4
(e) Discuss applications of hybrid plant. 4
(f) Explain abiotic stress. 4

5. (a) Discuss need for waste water treatment. 4
(b) Describe composting in brief. 4
(c) Describe composition of sewage. 4

OR

(d) Describe any one chemical method for treatment of industrial waste. 4
(e) Give outline of solid waste management. 4
(f) Explain oxidation pond. 4

6. Describe biodegradation of xenobiotics and recalcitrant compounds in detail. 12

OR

Discuss different types of bioremediation in situ with advantages and disadvantages. 12

7. Describe the survey for the demand for a given microbial product and feasibility of its production under the given constraints. 12

OR

Explain project preparation for financial assistance in detail and enlist different funding agencies. 12