A 2 (5)

(i) Printed Pages : 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 5 7 3

Exam. Code : 0 0 0 6

B.A./B.Sc. (General) 6th Semester

1048

BIOTECHNOLOGY (ELECTIVE)

Paper–Environmental and Fermentation Biotechnology

BIOT-Elect-Sem-VI-T

Time Allowed : Three Hours] **[Maximum Marks : 67**

Note :— Attempt **five** questions in all. Section C is compulsory. Attempt **two** questions each from Sections A and B.

SECTION–A

1. (a) What are renewable and non renewable resources ? Discuss the impact of conventional fuels on environment.

   (b) Discuss the production process of microbial hydrogen and its significance. 7,6

2. (a) Discuss any treatment scheme employed for treatment of municipal waste.

   (b) What are methanogenic bacteria and their role in biogas production ? 7,6

3. (a) Describe the role and application of nitrogen fixing microbes as biofertilizers.

(b) What is the use use of *Bacillus thuringiensis* toxin as a biocontrol agent ? 7,6

4. (a) Describe the biodegradation of pesticide with a suitable example.

(b) Discuss the process of biomining in any one ore. 7,6

SECTION–B

5. (a) Describe strain improvement programme. How mutations are used for this purpose ?

(b) Describe the approaches employed for isolation and screening of microbes. 7,6

6. (a) What is the significance of downstream processing in fermentation industry ? Discuss any one downstream process employed in fermentation industry.

(b) What is bioreactor ? Write a note on different parts and construction material of fermenter. 7,6

7. (a) Discuss the heat and mass transfer process in fermentation process.

(b) What is the significance of immobilization of enzymes ? Describe two methods for immobilization of enzymes. 7,6

8. (a) Define sterilization. Describe different types of sterilization methods.

(b) What are the main safety protocols to be followed in fermentation industry? 7,6

SECTION–C

9. (a) Describe activated sludge treatment

(b) Describe biofertilisers

(c) Explain filtration method used in downstream processing.

(d) Describe the submerged fermentation

(e) Write a short note on lypholization. 3×5=15