2020

BOTANY — HONOURS

Paper : DSE-A-2

(Industrial and Environmental Microbiology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer ***any five*** questions : 2×5

(a) Name the different component of a continuously stirred bioreactor.

(b) Name one non-legume symbiotic association for nitrogen fixation.

(c) What is eutrophication?

(d) Name one fecal and one non-fecal coliform bacteria in water sample.

(e) What are the industrial uses of enzymes amylase and lipase?

(f) Note down the advantages of lyophilization.

(g) Explain the role of lichen as indicator organism.

2. Write short notes on (***any two***) : 5×2

(a) Techniques involved in cell disruption

(b) Production of Ethyl alcohol

(c) Bioremediation of metal-contaminated soil.

3. Answer ***any three*** questions :

(a) What is biochemical oxygen demand and why is its reduction important in waste water treatment? How do primary and secondary waste water treatment methods differ? 4+6

(b) What is bioleaching? Comment on the bioleaching of a radioactive metal. Briefly describe the process of isolation of microorganisms from soil. 5+5

(c) Discuss the fermentation conditions and process of penicillin production. What are the industrial uses of immobilized Penicillin acylase? 7+3

(d) Name the different types of mycorrhizal association. Write a note on importance of arbuscular mycorrhizal association in plant root. 4+6

(e) (i) What are the roles of PSB and KSB in increasing soil fertilily?

(ii) What are the different stages of nodule formation?

(iii) Why *Pinus* can not grow in any type of soil? 4+4+2