T(5th Sm.)-Botany-H/DSE-A-2/CBCS

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 :

- (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) :

- (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.
 - (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

 2×5

5×2