

**2021**

**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) What are the functions of impeller (agitator) in a fermenter?
  - (b) Define bioventing.
  - (c) Explain COD.
  - (d) What is the function of leg haemoglobin?
  - (e) Mention two advantages of immobilized enzyme.
  - (f) What is trickling filter?
  - (g) What do you understand by bioremediation?
2. Write short notes on (**any two**) : 5×2
- (a) Microbial indicator and their uses.
  - (b) Applications of amylase.
  - (c) Continuous Stirred Tank Reactor.
3. Answer **any three** questions :
- (a) (i) What are the basic requirements for industrial production of ethanol? Mention the byproducts formed during ethanol production.
  - (ii) Draw a labelled diagram of an airlift fermenter. Mention two advantages of using airlift fermenter.
  - (iii) Why tower fermenter is used? (2+2)+(3+2)+1
  - (b) (i) Distinguish between DO and BOD.
  - (ii) Give a brief account of any one secondary treatment process. What is eutrophication? Why is it considered as a problem? 2+(4+2+2)
  - (c) How would you isolate a root nodulating bacteria? What do you understand by biological nitrogen fixation? Discuss the process in brief. 4+1+5

**Please Turn Over**

- (d) Discuss about the microbial population present in soil. What are the properties of an indicator organism? What is the function of Hertig's Net? 5+3+2
- (e) What are the industrial uses of citric acid and glutamic acid? Describe the fermentation conditions for penicillin production. 4+6
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