

B.Sc. 6th Semester (Honours) Examination, 2023 (CBCS)**Subject : Botany****Course : DSE-4****(Industrial and Environmental Microbiology)****Time: 2 Hours****Full Marks: 40***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* from the following: 2×5=10
- Give example of two industrially important microbes and mention their usages.
 - What are the major components of an industrially used fermentor?
 - Name one bioactive molecule produced by microbe and mention its importance.
 - Write an advantage and one disadvantage of air-lift fermentor.
 - What do you mean by flocculation?
 - What is a chemostat used for industrial fermentation process?
 - Mention the function of sparger in a bioreactor.
 - Cite two applications of bioremediation.
2. Answer *any two* from the following: 5×2=10
- Describe two different processes of isolation and concentration of industrially produced microbial products.
 - Describe a technique for isolation of microorganisms from air.
 - Discuss the role of microbes as biofertilizer.
 - Schematically represent the process of α -amylase production by microbes in industry. Write two disadvantages of solid state fermentation. 4+1
3. Answer *any two* from the following: 10×2=20
- What do you mean by enzyme immobilization? Describe principal methods available for immobilizing enzymes. 2+8
 - Describe different components of a typical bioreactor. Point out the difference between batch and continuous culture. 6+4
 - Differentiate between BOD and COD. Mention the common sources of pollutants for the contamination of surface water. What are the effects of water pollution? 4+3+3
 - Describe different methods of cell disruption to release the intracellular microbial products. Give one example of metabolite having industrial importance. Discuss advantages and disadvantages of bioremediation. 5+1+4

B.Sc. 6th Semester (Honours) Examination, 2023 (CBCS)**Subject : Botany****Course : DSE-4 (OR)****(Horticultural Practices and Post Harvest Technology)****Time: 2 Hours****Full Marks: 40***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* from the following: 2×5=10
- (a) What is hydroponics?
 - (b) Name five branches of horticulture.
 - (c) Differentiate between grafting and budding.
 - (d) What are the full forms of WIPO and IPR? 1+1
 - (e) What are the differences between varieties and cultivars? 1+1
 - (f) What is crop sanitation?
 - (g) Mention the different types of biopesticides.
 - (h) What do you mean by Urban forestry?
2. Answer *any two* from the following: 5×2=10
- (a) What is spurge? Mention the salient features of *Opuntia* and *Agave* with labelled diagram. 1+2+2
 - (b) Describe the economic parts, management and marketing of *Citrus*. 1+2+2
 - (c) What is irrigation? Describe the furrow and border irrigation methods with diagram. 1+2+2
 - (d) Write a short note on Mughal and Japanese garden with appropriate figure. 2½+2½
3. Answer *any two* from the following: 10×2=20
- (a) Describe the importance of post-harvest technology in horticultural crops. What are the methods of preservation and processing of that crops? 5+5
 - (b) Why flower exhibitions are very much important? Describe the preservation methods of cut flowers. 4+6
 - (c) Describe the different types of Biological weed control method. What is vermicompost? 8+2
 - (d) What is Quarantine? Describe different types of fungal and bacterial diseases in fruit crops with their symptoms and causal organism. 2+8