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**PG 3rd Semester Examination, 2024**

**MICROBIOLOGY**

**PAPER – MCB-303.1 & 303.2**

*Full Marks : 50*

*Time : 2 hours*

**Answer all questions**

*The figures in the right hand margin indicate marks*

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

**PAPER : MCB-303.1**

*( Fermentation Technology )*

**GROUP – A**

**Answer any two questions from the following :**

**2 × 2**

*( Turn Over )*

( 2 )

1. What is the significance of Reynolds' number ?  
Write its expression.
2. Mention various physico-chemical factors for enzyme immobilization.
3. What is Flocculation ? Give example of two flocculating agent.
4. What is the driving force of mass transfer ?  
Define mass transfer coefficient.

GROUP – B

Answer any two questions from the following :  
4 × 2

5. (a) What are different yield coefficients used in fermentation processes ?  
  
(b) What is specific growth rate and write its unit ?  
2 + 2
6. Mention different types of Sparger used in fermenter vessel and describe each type.

( 3 )

7. Write the properties of an ideal antifoam agent.
8. Mention the advantages and limitations of SSF.

**GROUP – C**

Answer any **one** question from the following :

8 × 1

9. Write the properties of ideal bioreactor. What are the different mode of heat transfer ? Write the steady state heat transfer rate equation in conduction process. 4 + 2 + 2
10. Write the significance of rheological properties of fermentation broth. Briefly discuss different methods of enzyme immobilization. 3 + 5

**PAPER : MCB-303.2**

*( Food Microbiology )*

GROUP – A

Answer any **two** questions from the following :

2 × 2

11. What is Moromi in Soy Sauce production ?

12. Define Z value. What is starter culture ? 1 + 1

13. Write the difference between homofermentative and hetero fermentative lactic acid bacteria.

14. Write the difference between food infection and food intoxication.

GROUP – B

Answer any **two** questions from the following :

4 × 2

15. Discuss the role of Aflatoxin and Ochratoxin in food deterioration.

( 5 )

16. What does it mean by oriental food ? Discuss the health beneficial effect of any one oriental food. 1 + 3

17. Describe in brief the acetic acid production through German or trickling method with appropriate schematic diagram.

18. Write short note (any one):

(i) Food borne disease caused by *Clostridium*

(ii) Factors influencing food spoilage.

### GROUP – C

Answer any **one** question from the following :  
8 × 1

19. Represent the production process of Hamanatto with flow diagram. Briefly describe the production process of Whiskey. What is Kilning in beer production ? 3 + 4 + 1

( 6 )

**20.** How do the canned products get spoiled ?  
Classify different types of food hazards  
causing adverse effect on human health. 3 + 5

**[ Internal Assessment – 10 Marks ]**

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