Name: **Enrolment No:**	

UPES

End Semester Examination, May 2023

Course: Food and Industrial Microbiology

Semester: IV

Program: Integrated BSc-MSc Microbiology

Duration: 3 Hours

Course Code: HSMB2013 **Max. Marks: 100**

Instructions: Read Questions Carefully

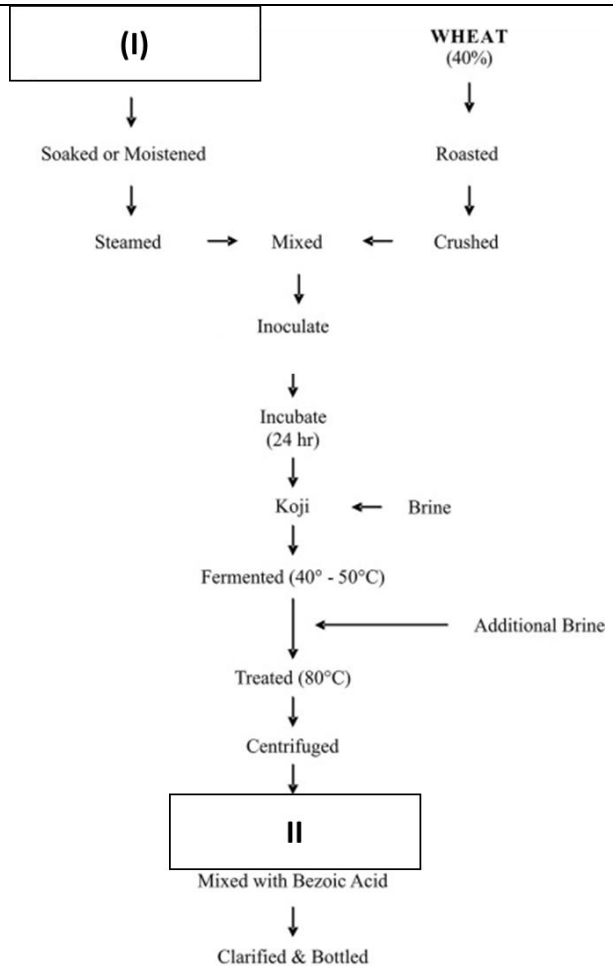
S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q1	Kumis is a type of fermented: A. Milk B. Cabbage C. Carrot D. Meat	**1.5**	**CO4**
Q2	The process of preserving food by rapid freezing followed by dehydration under vacuum is called: A. Lyophilisation B. Sterilization C. Cold Dehydration D. Cryopreservation	**1.5**	**CO2**
Q3	Today, about 99% of citric acid production is carried out by: A. Chemical synthesis B. Microbial fermentation C. Fragmentation D. Condensation	**1.5**	**CO5**
Q4	The fungus most commonly used for industrial production of citric acid is: (A) *Aspergillus niger* (B) *Escherichia coli* (C) *Gluconobactor suboxidance* (D) *Lactobacillus pentosus*	**1.5**	**CO5**

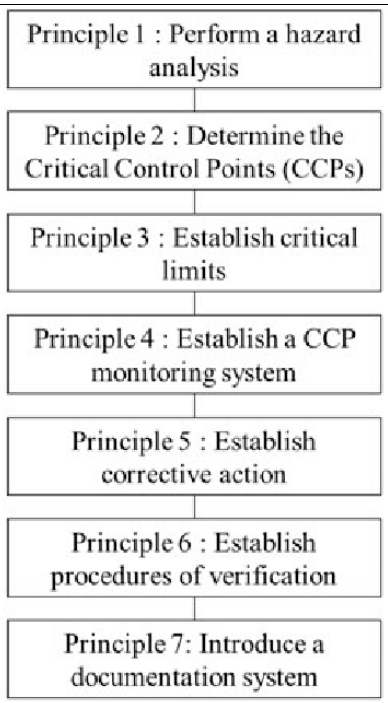
Q5	The best medium for the production of Penicillin is: A. Nutrient agar B. Corn steep liquor C. Sulfite waste liquor D. Whey	**1.5**	**CO5**
Q6	Crushed grapes used for wine manufacturing are known as: A. Wort B. Must C. Hop D. Pilsener	**1.5**	**CO3**
Q7	Leavening during fermentation of Idli is primarily caused by activity of: A. Homofermentative *Leuconostoc mesenteroides* B. Heterofermentative *Leuconostoc mesenteroides* C. Homofermentative *Lactobacillus mesenteroides* *D.* Homofermentative *Streptococcus faecalis*	**1.5**	**CO3**
Q8	Different methods of strain improvement are A. Protoplast fusion B. Recombinant DNA technique C. Genetic recombination D. All of these	**1.5**	**CO5**
Q9	L-lysine is produced from: A. *Corynebacterium glutamicum* *B. Streptococcus sp* *C. Mycobacterium sp* *D.* None of these	**1.5**	**CO5**
Q10	A by-product of streptomycin production is: A. Vitamin A B. Proline C. Vitamin B12 D. None of these	**1.5**	**CO5**
Q11	Industrial Production of Vitamin-B12 is from A. *Propionibacterium* sp. B. *Pseudomonas* sp. C. Both a and b D. None of these	**1.5**	**CO5**

Q12	Which of the following is obtained by fermenting milk? A. Gundruk B. Cheese C. Sinki D. Kombucha	**1.5**	**CO4**
Q13	Which of the following leads to the formation of soft cheese? A. Removal of a small proportion of whey B. Using more amount of milk C. Removal of the larger proportion of whey D. Using less amount of milk	**1.5**	**CO4**
Q14	Large holes in swiss-type cheese is due to CO_2 production by: *A. Propionibacterium shermanii* *B. Penicillium roquefortii* *C. Aspergillus flavus* *D. Lactobacillus acidophilus*	**1.5**	**CO4**
Q15	Rennet is: A. Hard cheese B. Complex set of enzymes C. Soft cheese D. Semi-hard cheese	**1.5**	**CO4**
Q16	Common microbes used as starter culture in yoghurt are: A. *S thermophilus* and *L bulgaricus* B. *P notatum and A niger* C. *L acidophilus and P aeruginosa* D. *B subtilis and C botulinum*	**1.5**	**CO4**
Q17	A milk sample was adulterated by adding starch to increase solid content. Such adulteration can be detected by adding: A. Congo red to milk sample B. Iodine to milk sample C. Acid to milk sample D. Alkali to milk sample	**1.5**	**CO6**
Q18	A suitable selective media for enumeration of Lactobacilli in yoghurt is: A. EMB agar B. McConkey agar C. MRS agar D. NA agar	**1.5**	**CO4**

Q19	A brown color in milk may result from: A. *Pseudomonas putrefaciens* B. Enzymatic oxidation of tyrosine by *P fluorescens* C. Both (A) and (B) D. *S. marcescens*	**1.5**	**CO1**
Q20	*Pseudomonas nigrifaciens* in mildly salted butter may cause: A. black smudge B. greenish areas C. pink color D. none of these	**1.5**	**CO1**

	Section B **(4Qx5M=20 Marks)**		
Q 1	A. What are mold-ripened cheese? B. Give two examples of molds used for making mold-ripened cheese.	**5** (2+3)	**CO4**
Q2	A. What is blanching? B. What is the effect of blanching on food? C. Name two antioxidants used in food preservation.	**5** (2+3)	**CO2**
Q3	Write a brief note on the fermentation process of Lactic acid with a schematic diagram.	**5**	**CO5**
Q4	A. What is rancidity? B. Mention the three types of spoilage seen in canned foods.	**5** (2+3)	**CO1**

Section C (2Qx15M=30 Marks)			
Q 1	 A. Identify the fermented food from above flow chart. B. Complete the labels (I) and (II) in above figure. C. Describe briefly the production process of above fermented food. D. What is the difference between Koji and Moromi? E. Briefly explain the microbiology of Koji and Moromi fermentation processes?	**15** (2+2+4+3+4)	**CO3**

Q2	 A. What does the 7 principles represent in above figure? B. Which principle is the most important and why? C. What is a hazard? D. What are critical control points? E. What is the utility of a decision tree? F. State the microbiological hazards that you envisage in a dairy industry.	**15** (2+3+2+2 +1+5)	**CO6**
Section D (2Qx10M=20 Marks)			
Q 1	A. Write a short note on naturally occurring anti-microbial substances present in milk. B. Define minimal infective dose? C. What is the difference between food borne infection and food-borne intoxication?	**10** (5+2+3)	**CO2**
Q2	A. What are the various intrinsic and extrinsic factors involved in microbial food soilage. B. What is Maillard reaction? C. State the merits and demerits of Maillard reaction during food processing and storage?	**10** (5+2+3)	**CO1**