


Name:			
Enrolment No:			
UPES End Semester Examination, December 2023			
Course: Probiotics and Prebiotics Program: Int. BMSC (Microbiology) Course Code: HSMB 3022P		Semester: V Duration: 3 Hours Max. Marks: 100	
Instructions: The Assessment consists of 4 sections. <ul style="list-style-type: none"> ● Part A contains 20 questions of 1.5 marks each and all questions are compulsory. ● Part B consists of 4 questions of 5 marks each and all questions are compulsory. ● Part C consists of 2 questions of 15 marks each and all questions are compulsory. ● Part D consists of 2 questions of 10 marks each and all questions are compulsory. 			
S. No.	Section A	Marks	COs
	Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)		
Q 1	What is the primary focus of microbiology in the context of probiotics and prebiotics? <ol style="list-style-type: none"> a. Developing new antibiotics b. Investigating the role of vitamins in digestion c. Studying harmful bacteria in the gut d. Understanding the interactions between microorganisms and the host 	1.5	CO1
Q 2	Probiotics are only good for the digestive system. State: True or false?	1.5	CO2
Q 3	Which of the following foods is a good source of probiotics? <ol style="list-style-type: none"> a. Apples b. Chicken breast c. Whole wheat bread d. Yogurt 	1.5	CO1
Q 4	The easiest way to define prebiotics is: <ol style="list-style-type: none"> a. Foods that nourish beneficial gut bacteria b. Digestive enzymes c. Harmful bacteria in the gut d. Probiotic supplements 	1.5	CO1
Q 5	What do prebiotics do for the gut primarily? <ol style="list-style-type: none"> a. Killing harmful bacteria b. Nourishing beneficial gut bacteria c. Providing energy for the host d. Preventing nutrient absorption 	1.5	CO2

Q 6	Which food is the main source of prebiotics? a. Animal products b. Fruits and vegetables c. Processed foods d. Sugary snacks	1.5	CO1
Q 7	What types of microbes live in the intestines? a. Diverse species of bacteria, archaea, and fungi, especially Bacteroides and Firmicutes bacteria b. A narrow range of bacteria, especially Firmicutes c. A narrow range of bacteria and fungi, especially Bacteroides d. Archaea and fungi only	1.5	CO2
Q 8	Which of the following is synthesized and stored in the liver cells? a. Galactose b. Lactose c. Glycogen d. Arabinose	1.5	CO2
Q 9	How may probiotics help regulate the immune response? a. By increasing inflammation b. By suppressing immune cell activity c. By reducing inflammation d. By promoting allergies	1.5	CO3
Q 10	Name a part of the body where probiotics produce antimicrobial substances that inhibit the growth of harmful bacteria? a. Gut b. Lungs c. Liver d. Skin	1.5	CO4
Q 11	Which of the following has yielded compounds with the most antimicrobial activity? a. Water b. Air c. Volcanoes d. soil	1.5	CO3
Q 12	Prokaryotic cells are more resistant to osmotic shock than eukaryotic cells because? a. Their cell wall is composed of peptidoglycan b. They are selectively permeable c. They contain Osmo-regulating porins d. They block water molecules from entering the cell	1.5	CO3
Q 13	The prokaryotic cell membrane..... a. Contains metabolic enzymes b. Is selectively permeable c. Regulates the entry and exit of materials d. Contains proteins and phospholipids	1.5	CO3

Q 14	In which of the following conditions are 'probiotics' needed by people? a. People with strong immune systems b. People not with respiratory allergies c. People with mouth cancer d. People with yeast infections	1.5	CO4
Q 15 Is a probiotic which has an impact on the mucosal barrier function of the intestinal tract. a. Colon cancer b. Allergies c. Cholesterol d. Infant health	1.5	CO3
Q 16	Which statement about probiotics in the GI tract is false? a. Probiotic densities increase when proceeding down the GI tract b. Probiotic colonization initially occurs in the mother's flora or in the hospital environment c. Probiotics can influence cytokine production d. There is NO difference in flora between caesarean-born infants and conventionally born infants	1.5	CO2
Q 17	Probiotics can alleviate the symptoms of lactose intolerance. State: True or False?	1.5	CO2
Q 18	There is adequate data to suggest that probiotics should be used in all patients receiving antibiotics to prevent the occurrence of Clostridium difficile-associated diarrhea. State: True or False?	1.5	CO4
Q 19	Name a part of the body where probiotics produce antimicrobial substances that inhibit the growth of harmful bacteria? a. Gut b. Lungs c. Liver d. Skin	1.5	CO3
Q 20	What is the most used technique to Characterise the human intestinal microbiota? a. Sequencing of 16S rRNA transcripts b. Metabolomic c. Mass spectrometry (MS) d. All of the above	1.5	CO4
Section B (4Qx5M=20 Marks)			
Q 1	What are the beneficial effects of probiotics for human health?	5	CO3
Q 2	Can probiotics improve gastrointestinal health? Explain?	2+3	CO2
Q 3	Differentiate between probiotics and prebiotics with examples?	2+3	CO1
Q 4	Explain the term "microbiome." How can we maintain a healthy microbiome?	2+3	CO3

Section C (2Qx15M=30 Marks)			
Q 1	How do probiotic bacteria influence the composition and function of the intestinal microbiota? What are the factors that can influence the gut microbiota? Why is the gut microbiota important?	5+5+5	CO2
Q 2	What is the mechanism of action of probiotics in the body? Where on a healthy human is the microbiome located? Is <i>Lactobacillus</i> used as a probiotic?	5+5+5	CO3
Section D (2Qx10M=20 Marks)			
Q 1	Why is the microbiota important for the human immune system? How do probiotics improve innate and adaptive immune systems?	5+5	CO2
Q 2	How does dysbiosis lead to disease? Can probiotics cause dysbiosis?	5+5	CO4