



UNIVERSITY OF PETROLEUM AND ENERGY  
STUDIES

End Semester Examination, December 2021

Course: Food Microbiology and Safety Semester: III

Program: B.Tech. Food Technology

Duration: 03 hrs.

Course Code: HSFT 2002

Max. Marks: 100

Instructions:

	SECTION A (Type the answers in test box)	(20Q x1.5M= 30 Marks)	CO
	MCQs or Fill in the blanks	1.5	CO
Q1	Which one of the following is NOT correct for the production of single cell proteins? a. the growth media should be cheap and readily available in high quantities b. organism should not have pathogenicity or toxicity c. organisms must grow slowly d. should produce high amount of protein	1.5	CO1
Q2	Alcohol fermentation occurs in ____ of yeast cells a. cytosol b. nucleus c. plasma membrane d. cell membrane	1.5	CO1
Q3	Mainly the following organism is used for vinegar production a. <i>Lactobacillus</i> b. <i>Clostridium</i> c. <i>Acetobacter</i> d. <i>Penicillium</i>	1.5	CO1
Q4	During beer production, yeast is added to ____ to start the fermentation a. malt b. mash c. hops d. wort	1.5	CO1
Q5	During cheese production, at which step additional microorganisms are added to develop special characteristics in cheese? a. Draining b. Ripening / Aging c. Scalding d. Coagulation	1.5	CO1
Q6	Suppose you decided to use an indicator organism to determine the presence of pathogen in food. Which of the following is not a characteristic of an indicator organism? a. indicator organism should be present when the pathogen is present b. indicator organism should have similar survival to that of pathogen c. indicator organism should be in less number than the pathogen d. indicator organism should not proliferate in the environment being monitored	1.5	CO2
Q7	Fastidious microorganisms _____. a. grow fast b. have simple nutritional requirements c. have complicated nutritional requirements d. promote growth of non-fastidious microorganisms	1.5	CO2

Q8	Suppose you would like to inhibit the growth of majority of microorganism except the one that you are looking for. Which type of media would you prefer? a. general purpose media b. selective media c. elective media d. diagnostic media	1.5	CO2
Q9	For sugar fermentation to generate alcohol, which of the following condition would you provide? a. aerobic b. anaerobic c. microaerophilic d. anything is ok	1.5	CO2
Q10	In beer production using grains, the first step is mashing. This is done because the yeast used in fermentation does not produce a. amylase b. lipase c. hydrolase d. cellulase	1.5	CO2
Q11	Who is considered as the father of microbiology? a. Louise Pasteur b. Antony van Leeuwenhoek c. Robert Koch d. Francesco Redi	1.5	CO3
Q12	The number of microorganisms in the air depends on a. amount of suspended dust in the air b. humidity c. sunshine d. all of the above	1.5	CO3
Q13	Which of the following is NOT part of Whittaker's five-kingdom system of classification? a. Kingdom Monera b. Kingdom Archaea c. Kingdom Plantae d. Kingdom Animalia	1.5	CO3
Q14	Which of the following can be motile? a. bacteria b. yeast c. mold d. all of the above	1.5	CO3
Q15	Lipopolysachharide in gram-negative bacteria is present in a. cell wall b. cytoplasmic membrane c. outer membrane d. nuclear membrane	1.5	CO3
Q16	Putrefaction in a food product is a result of microbial breakdown of a. sugars b. fats c. proteins d. all of the above	1.5	CO4
Q17	Which type of <i>Staphylococcus aureus</i> enterotoxin is the most heat stable? a. A b. B c. D d. E	1.5	CO4

Q18	Which of the following condition is suitable for most food spoiling bacteria? a. acidic pH b. alkaline pH c. neutral pH d. all of the above	1.5	CO4
Q19	The following food poisoning bacteria is transferred to food by coughing and sneezing of an infected person a. <i>Bacillus cereus</i> b. <i>Salmonella</i> c. <i>Staphylococcus aureus</i> d. <i>Clostridium perfringens</i>	1.5	CO4
Q20	High oxidizing potential in food favors the growth of a. aerobic bacteria b. anaerobic bacteria c. facultative aerobic bacteria d. facultative anaerobic bacteria	1.5	CO4
<b>SECTION B (Scan and upload)</b>		<b>(4Qx5M=20 Marks)</b>	<b>CO</b>
Short Answer Type Question (5 marks each) (100-120 words)			
Q1	A. What is curing of meat? B. Explain different methods of curing	1+4	1
Q2	Express your thoughts on the role of microorganisms in food industry	5	2
Q3	A. What is the spontaneous generation theory Vs. biogenesis? B. Which scientist disproved the spontaneous generation theory? C. How?	1+1+3	3
Q4	A. What is food poisoning? B. Rationale for its increased prevalence C. Types of food poisoning based on the mode of illness.	1+2+2	4
<b>SECTION C (Scan and upload)</b>		<b>(2Qx15M=30 Marks)</b>	<b>CO</b>
<b>Two case studies 15 marks each subsections (300 words max)</b>			
Q1	A. What are HACCP principles? You are in charge of investigating a food poisoning event. A group of 10 family members fell sick in 48h after having a dinner together. The symptoms were nausea, vomiting, double vision and difficulty in speaking. The fever was absent but one family member died after 4 days of consuming the sandwiches. During your investigation, you identified that they all had sandwiches prepared with home-made cheese in their dinner. B. What do you think the causative agent is? C. How will you investigate and D. Prove (necessary condition for the outbreak)? E. How to prevent this outbreak?	7+1+3+2+2	2+4
Q2	You are a proud owner of a food industry. You are working on improving food storage and prevent food spoilage. Identify the A. extrinsic and B. intrinsic factors that affect microbial growth in food. C. How can you devise a strategy to prevent the growth of spoilage microbes in food?	6+5+4	4
<b>SECTION- D (Scan and upload)</b>		<b>(2Qx10M=20 Marks)</b>	<b>CO</b>
Long Answer type Question (200-250 words)			

Q1	<p>A. Identify the rules you need to prove a causal relationship between an organism and a disease?</p> <p>B. You suspect that a bacterium called “<i>Blackboard onlino</i> (B.onlino)” is causing “sloppy sleep” disease in mouse. What experiments will you do to check whether your suspicion is correct? In other words what experiments will you perform to establish a causal relation of B.onlino to sloppy sleep disease?</p>	<b>5+5</b>	<b>2+3</b>
Q2	<p>You want to establish an industry to produce single cell protein.</p> <p>A. Identify the qualities of organisms that you would like to use in your industry to produce single cell protein?</p> <p>B. What potential issue will you face and what are the potential strategies that you could use?</p>	<b>5+5</b>	<b>1</b>