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Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



VI SEMESTER B.E (BIOTECHNOLOGY)

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: PROGRAM ELECTIVE II: FOOD PROCESSING

TECHNOLOGY [BIO 322]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates

- ✤ Answer ANY FIVE FULL questions.
- ✤ Missing data may be suitable assumed.

	Understanding the factors that influence microbial growth is essential to maintain				
1A.	food quality. What are the intrinsic and extrinsic factors influencing the growth of				
	microorganisms in food?				
1 D	ain the four types of food spoilage process leading to the deterioration of the				
ID.	safety, sensory quality or nutritional value of food	2 191			
1C.	The deliberate addition of microorganisms fasten the brewing process and	nd er 4M			
	increases the final production also. Enumerate the steps involved in beer				
	production with special reference to the addition of selected microorganisms.				
2A.	licrobiologist employ different tools and techniques to detect microorganisms				
	present in food produts. List the possible methods used to detect the existence	ods used to detect the existence 3M			
	of microbial contaminant in food product.				
	To detect outbreaks of infectious diseases (e.g., salmonellosis) and investigate				
2B.	risk factors for infection, what characteristics should a communicable disease	should a communicable disease 2M			
	surveillance system have?				
2C.	Explain the causes and spoilage of meat under aerobic and anaerobic condition	5M			
3A.	To produce high quality processed foods it's necessary to select standard raw				
	materials and apply the mechanical separation process to improve the quality.				
	Write in detail about the mechanical separation and grading method of improving	nproving			
	the quality of the raw material.				
3B.	Differentiate the conventional and freeze drying process applied in food industry	2M			

3C.	Biotechnology is being used to engineer and adapt organisms especially microorganisms in an effort to find sustainable ways to food industry. Explain the benefits of biotechnological applications in food and food industry	4M
4A.	The selection of raw materials influence the production rate and also cutoff the capital cost of an industry. What are the geometric and physical properties of raw material needs to be consider to improve the product quality.	2M
4B.	Explain the three broad categories of packaging for foods to improve the safety, shelf life, and convenience of the food product.	5M
4C.	A food engineer is asked to design a food process, he or she must be well aware of the physical principles that govern most of the unit operations commonly found in the food industry. Prepare a flow pattern that illustrate the various unit operations successfully used to convert the raw material (liquid and solid) into food product.	3M
5A.	Hazard Analysis and Critical Control Points (HACCP) is a systems approach to improve food safety by preventing food contamination. What are the stages required to follow to implement the HACCP system?	7M
5B.	Write the full form of FSSAI, GHP, GPP, GMP, GDP, GTP	3M
6A.	Estimate the osmotic pressure of orange juice with 11% total solids at 20°C, using the Gibb's relationship. (Data, Concentration of solids =11% and temperature=20°C, product density is 1063.6 kg/m ³)	3M
6B.	A weak wine has 10.5% (w/w) ethyl alcohol (MW=46) and 1.5% (w/w) dry extract (assimilated to glucose, MW=180). It is desired to concentrate the wine to 13% alcohol by freeze concentration. Find the temperature to which the wine has to be cooled and the quantity of water to be removed as ice from 100 kg of wine.	4M
6C.	Sugar crystals were ground from an average Sauter diameter of 500 μ m to powder with an average Sauter diameter of 100 μ m. The net energy consumption was 0.5 kWh per ton. What would be the net energy consumption for grinding the crystals to 50 μ m powder, use Rittinger's and Kick's law.	3М