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Daffodil International University

Department of Nutrition and Food Engineering
Faculty of Health and Life Sciences
B.Sc. in Nutrition and Food Engineering
Midterm Examination Fall 2026

Course Code: 0721-1203 **Course Title: Unit Operation in Food Industries I**
Level and Term: L-1, T-2 **Section: 262 All** **Course Teacher Initials:** JR/ZF/MMM/NMIIH
Time: 1 hour 30 minutes **Total Marks: 25**

Maintaining the order of the questions are highly appreciated

			Marks
1. a)	Why do you call pasteurization is an example of unit operation? Justify with suitable example.	[CLO1.PLO2,C1]	2.5
b)	Discuss magnetic cleaning with proper illustration.	[CLO1,PLO2,C1]	2.5
2. a)	Explain the second law of thermodynamics with an example.	[CLO1, PLO2, C2]	2.5
b)	Suppose you have milk sample having a density value of (520 +R) lb/ft^3. You have to convert the value to kg/mm^3. Apply the conversion formula to convert the value. (Where, R is the last one digit of your ID No.)	[CLO1, PLO2, C2]	2.5
3. a)	Bangladesh is one of the largest wheat producers in the world. As a Food Engineer, which cleaning method would you choose for raw wheat cleaning? Explain the most suitable method for cleaning wheat and provide justification for your choice.	[CLO1, PLO2, C4]	2.5
b)	Differentiate between exothermic and endothermic reaction with suitable diagram.	[CLO1.PLO2,C4]	2.5
4. a)	Describe the principle of mass conservation and draw a schematic block diagram representing the overall mass balance and component balance for a system with two inputs and three outputs.	[CLO1,PLO2,C3]	2.5
b)	Draw and label the symbol of rotary pump, evaporator, condenser, belt conveyor, and storage tank.	[CLO1,PLO2,C3]	2.5
5. a)	If 35,000kg of whole milk containing 4% fat is to be separated in a 6 hour period into skim milk with 0.45% fat and cream with 45% fat, what are the flow rates of the two output streams from a continuous centrifuge which accomplishes this separation?	[CLOI,PLO2,C3]	2.5
b)	Potatoes are dried in a dryer. Initial moisture content of raw potaotes14% and final moisture content after drying 7%. What is the Drying yield of potatoes from each 1000 kg of raw potatoes? Assume that 8% of the original potatoes is lost in peeling by weight. Drying yield of potatoes.	[CLOI.PLO2,C3]	2.5