FIJI NATIONAL UNIVERSITY

College of Agriculture, Fisheries & Forestry

School of Veterinary Science, Animal Husbandry and Fisheries

Department of Veterinary Science

B.V. Sc & A.H. Year III

Trimester I Final Examination – 2018

LPT 701: Milk and Milk Products Technology

Time Allowed: 3.00 hours plus (10 minutes reading time) **Total Marks: 100**

INSTRUCTIONS:

1. This paper consists of six pages including one page Answer Sheet.
2. Please check to see that all your paper is complete.
3. Answer all the Objective Type Questions on the Answer Sheet and Descriptive Type Question in the Answer Booklet only.
4. The Answer sheet of the objective Type Questions will be collected **45 Minutes** after the start of Examination.
5. No written or printed material and mobile phones are allowed in the examination hall
6. Marks allocated for each question appears at the side of each question so allocate your time accordingly.
7. This paper is divided into Two Parts. First Part contains Objective Type Questions, which is having four Sections – A, B, C, and D. All questions of this part are compulsory. Second part is Descriptive Type, which is having eight (8) questions. Attempt only any six questions from this part.

I. OBJECTIVE TYPE QUESTIONS (40 Marks)

To be answered only on the Answer Sheet.

Section A: Multiple-choice Questions (10 Marks)

Section B: Write True or False (10 Marks)

Section C: Matching type (10 Marks)

Section D: Fill in the blanks (10 Marks)

II. DESCRIPTIVE TYPE QUESTIONS (60 marks)

There are **eight (8)** descriptive type questions provided, please **attempt any Six (6) questions only** and write on the Answer Booklet. Answer every question from a new page to facilitate evaluation.

I. OBJECTIVE TYPE QUESTIONS (40 Marks)

Section A: Multiple Choice (10 Marks)

1. Pasteurization is important to_____ .
   A. increase fat content in milk
   B. kill all pathogenic micro-organisms in milk
   C. separating curd from whey protein
   D. to fortify vitamins in milk

2. Purpose of drying milk is to_____ .
   A. preserve it
   B. increase shelf life
   C. reduce its bulk for economy of transportation
   D. all of the above

3. Homogenization has advantages of_____.
   A. uniform fat in milk
   B. increasing water content in milk
   C. increasing fat content in milk
   D. all of the above

4. High Temperature Short Time (HTST) process for milk involves heating it to_____ .
   A. 72 - 75 °C with a 15 second holding time
   B. 100-120°C with a 15 second holding time
   C. 63°C with a 15 second holding time
   D. 40°C with a 15 second holding time

5. Khoa is a milk product of_____ .
   A. fermented milk
   B. whey protein
   C. partially dehydrated (heat coagulated) whole milk product prepared by continuous heating of milk, while also constantly stirring-cum-scraping it reaches a semi solid consistency
   D. all of the above

6. Adding acetic acid and/or citric acid to milk helps to separate whey from_____ .

   A. proteins

   B. butter milk

   C. curd

   D. none of the above

7. Example of water soluble vitamin in milk is_____ .

   A. Vitamin A

   B. Vitamin D

   C. Vitamin E

   D. Vitamin C

8. Function of amyl alcohol in determination of butterfat content in milk using the Gerber method is_____ .

   A. to dissolve protein that encapsulates the butterfat (fat globule membranes)

   B. to separate fat from the milk acid mixture

   C. to increase water content in milk

   D. all of the above

9. Examples of pathogenic bacteria still of concern today in raw milk and other dairy products is_____ .

   A. *Lactobacillus cremoris*

   B. *Lactobacillus lactis*

   C. *Lactobacillus casei*

   D. *Escherichia coli* O157:H7

10. Triglycerides in milk are made up of one glycerol molecule and_____ .

    A. three amino acids

    B. three fatty acids

    C. three glucose molecules

    D. none of the above

Section B: Write True or False (10 Marks)

1. Examples of water soluble vitamins are; vitamin A, D, E and K.
2. Milk is homogenized to increase size of fat globules.
3. The iodine value (IV) is largely a measure of the oleic-acid content and thereby of the softness of the fat.
4. Milk proteins contain all 9 essential amino acids required by humans.
5. Milk proteins are synthesized in the mammary gland, but 60% of the amino acids used to build the proteins are obtained from the cows' diet.
6. Lactose is a disaccharide in milk comprising of glucose and fructose.
7. Lipases are enzymes that degrade proteins.
8. Skimmed milk is not cream by product.
9. Cheese can be allowed to age for more than 3 years.
10. Starter cultures give the fermented product characteristic properties such as acidity (pH), flavour, aroma and consistency.

Section C: Matching type (10 Marks)

1	Plasmin	A	is important to kill all pathogenic micro-organisms in milk
2	Condensed milk	B	an example of a soft cheese
3	Total solids (TS)	C	is a major protease enzyme in milk
4	Paneer	D	is an example of fermented milk product
5	Butyrometer	E	about 60 percent of the water content is removed
6	Alkaline phosphatase	F	is summation of butterfat content and solid not fat
7	Yorghurt	G	is a heat sensitive enzyme in milk that is used as indicator of degree of pasteurization
8	Homogenization	H	instrument used to measure butterfat content in milk
9	Pasteurization	I	instrument used to measure specific gravity of milk
10	lactometer	J	a process by which fat droplets from milk are emulsified and the cream does not separate

Section D: Fill in Blanks (10 Marks)

Fill in any one sign of milk spoilage in spaces provided in table below.

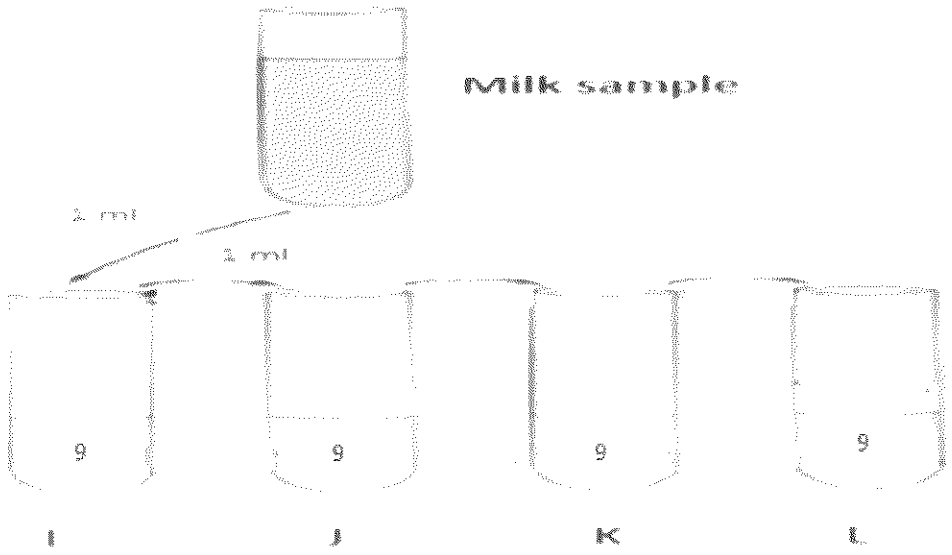
Spoilage type	Organisms involved	Signs of spoilage
Proteolysis	*Pseudomonas sp.Bacillus sp. Bacillus subtilis, B. cereus var. mycoides, Pseudomonas putrefaciens, p. viscose, Streptococcus, liquefaciens*, and proteus spp.	A ..... (2)
Sweet curdling	*Bacillus sp.; Proteus sp.; Micrococcus sp.*	B..... (2)
Lipolysis	*Pseudomonas sp. Pseudomonas fluorescens Achromobacter lipolyticum; yeasts, e.g., Candida lipolytica; and moulds, e.g., Pencillium spp.,Geotrichum candidum.*	C..... (2)
Ropiness	*Alcaligenes sp.,Klebsiella sp.,Enterobacter sp.*	D.....(2)
Red rot	*Serratia marcescens*	E.....(2)

II. DESCRIPTIVE TYPE QUESTIONS (60 marks)

1. Describe briefly the following
   i. Starter culture (2)
   ii. Bactofugation (2)
   iii. Ultra High Temperature (UHT) (2)
   iv. Homogenisation (2)
   v. Electropasteurisation (2)

2. i. How many parts by weight of 40% cream and 5% milk must be mixed to make milk testing 15% butterfat? (5)

   ii. If you pipette 1 ml of milk sample into a 9ml sterile blank water, what dilution factor do you get [I]? (2)
   Continue to make 3 more serial dilution factors for test tube J, K and L as shown in diagram below (3)



3. List the essential things required when making paneer. Draw the flow diagram for paneer making. (10)

4. Describe the factors affecting milk composition of cows. (10)

5. Describe the packaging, transportation, storage and distribution of milk and milk products. (10)

6. Describe the different methods used to pasteurize milk.

7. Describe how powdered milk is made using
   i. Roller/drum process (5)
   ii. Spray drier process (5)

8. Describe manufacturing process of cheddar cheese. (10)

THE END

XXXXXXXXXXX

Date: ..... Marks obtained: .....

Name: ..... Student I D No.: .....

B.V. Sc & A. H. Year III

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LPT 701: Milk and Milk Products Technology

I. Objective Type Questions - Answer Sheet

Section A	
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Section B	
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Section C	
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Section D
A .....
B.....
C.....
D.....
E.....