

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, B.Tech. Dairy Technology 2018-19

Semester	: IV (New Syllabus)	Academic Year	: 2018-2019
Course No.	: DT-406	Course Title	: Condensed and Dried Milks
Credits	: 3+2=5	Total Marks	: 50
Day & Date	: Saturday, 29.06.2019	Time	: 15.00 to 17.00 Hrs.

- Note :** 1) All questions from **Section 'A'** are compulsory.
2) Solve **Any Five** questions from **Section 'B'**.
3) Draw neat and well labelled diagram wherever necessary.

SECTION - 'A'

Q.1 A) Choose the most appropriate answer from the options given below. (05)

- i) The test which determines the heat stability as well as the pH of milk
 - a) Alcohol index test
 - b) Alcohol - Alzarin test
 - c) Alcohol test
 - d) Acidity test
- ii) The steam required by triple effect evaporator to evaporate 1 kg. of water from milk
 - a) 1.2 kg
 - b) 0.6 kg
 - c) 0.3 kg
 - d) 0.4 kg
- iii) Percentage usage of seed lactose in condensed milk is
 - a) 1.0-3.0 %
 - b) 0.01-0.03
 - c) 0.1-0.3
 - d) None of the above
- iv) Whey protein nitrogen content per gram of low heat skim milk powder should be
 - a) 6 mg.
 - b) 60 mg.
 - c) 0.6 mg
 - d) 0.06 mg.
- v) According to FSSR-2011, infant milk foods should contain moisture not more than
 - a) 4.5 %
 - b) 4 %
 - c) 5 %
 - d) 6 %

B) Do as directed. (05)

- i) Define Instantization.
- ii) Classify the drying system
- iii) Write the causes for Age-thickening defect in condensed and evaporated milk.
- iv) Elaborate ADMI.
- v) Who is the father of milk condensing?

Q.2 A) Answer the following in one sentence. (05)

- i) Write the formula for True density.
- ii) Write the formula for % SNF in cream.
- iii) Mention the types of evaporator based on position of heating tubes.
- iv) What is seeding?
- v) Write the objective of atomization.

(P.T.O.)

- B) Rewrite the statement after making necessary correction in underlined words, if (05) necessary.
- i) Age thickening in milk powders is due to absorption of moisture
 - ii) The seed lactose should be added to the batch in powdered form.
 - iii) Calcium sulfate is added to provide iron for blood formation in the preparation of infant food.
 - iv) Higher the pH, lower the heat stability of milk.
 - v) Inversion of the evaporated milk cans during storage will minimize fat separation.

SECTION – 'B'

- Q. 3 Explain the history and developments of dried milks. (06)
- Q. 4. With the help of flow diagram explain the manufacture of evaporated milk. (06)
- Q. 5 What is pilot sterilization test with respect to evaporated milk? Explain it in detail. (06)
- Q. 6 A) Give heat classification of milk powders. (02)
B) Write a note on membrane concentration. (02)
C) What is mean by freeze drying? (02)
- Q. 7 A) Explain the salt balance theory of heat stability of milk. (03)
B) Discuss the physico-chemical changes takes place during manufacture of condensed milk. (03)
- Q. 8 Write a short note on.
A) Microbial quality of dried milks. (02)
B) Physical properties of dried milks. (02)
C) Infant foods (02)
- Q. 9 A) Enlist the defect encountered in sweetened condensed milk. (02)
B) Write in detail procedure of malted food making. (04)

ANSWER KEY

DT-406 (2+2=4)

Condensed and Dried Milk Products

SECTION - 'A'

Q. 1 A) Choose the most appropriate answer from the options given below.

- i) b) Alcohol – Alzarin test.
- ii) d) 0.4 kg
- iii) c) 0.1-0.3
- iv) a) 6 mg.
- v) a) 4.5 %

B) Do as directed.

- i) Refers to the process by which dried milk and milk products are made instant soluble.
- ii) Roller drying, spray drying.
- iii) Excessive forewarming temp., addition sucrose before forewarming and low sugar ratio.
- iv) American Dry Milk Institute
- v) Gail Bordan

Q. 2 Answer the following in one sentence.

A)

- i) True Density =

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$$\frac{(\% \text{ fat} / 0.93) + (\% \text{ MSNF} / 1.58) + \% \text{ water}}{1}$$

- ii) % SNF in cream =

$$\frac{(100 - \% \text{ fat in cream} \times \% \text{ SNF in milk})}{(100 - \% \text{ fat in milk})}$$

- iii) Horizontal, vertical and inclined.
- iv) Seeding refers to the introduction of lactose in very fine powder during cooling of condensed milk to provide nuclei for crystallization.
- v) To reduce the milk to particles, so small in size that due to their large surface area they surrender their moisture.

B) Rewrite the statement after making necessary correction with underlined words, if necessary.

- i) Caked defect in milk powders is due to absorption of moisture
- ii) The seed lactose should be added to the batch in powdered form.
- iii) Ferrous sulfate is added to provide iron for blood formation in the preparation of infant food
- iv) The higher the pH, the higher the heat stability of milk.
- v) Inversion of the evaporated milk cans during storage will minimize fat separation.
