

PARUL UNIVERSITY
FACULTY OF AGRICULTURE
B. Tech (Dairy Technology) Winter 2019-20 Examination

Semester: 3**Date: 06/12/2019****Subject Code: 20104208****Time: 10:30am to 12:30pm****Subject Name: Condensed & Dried Milks****Total Marks: 50****Instructions**

1. All questions are compulsory.
2. Figure to the right indicate full marks
3. Make suitable assumption whenever necessary
4. Start new question on new page

Q.1**A) Fill in the blanks (Each of 0.5 marks) (05)**

- i) As per FSSAI, sweetened condensed partially skimmed milk should have fat content of.....
- ii) Fat content of SMP according to FSSAI specifications.....
- iii) Lecithin is added in WMP to increase
- iv) The roller dried whole milk powder finds good application in.....
- v) The recommended rate of addition of lactose seed crystals in the manufacture of sweetened condensed milk is about.....
- vi)constituents of powder provide stickiness to the milk powder
- vii) The modern method of drying milk commercially is.....
- viii)Kg of steam required for 2 stage evaporator of 1 kg water from milk
- ix) The additives used in pilot sterilization test is
- x) Salt balance ratio of cow milk is

B) Multiple Choice Questions (Each of 0.5 Mark)

- i) As per FSSAI, the minimum fat content in sweeten condensed milk is _____
 A. 9 B. 8 C.11 D. 10
- ii) Seeding material used for lactose crystallization is
 A. Fructose B. Sugar
 C. α - lactose monohydrate D. Maxilact
- iii) Flowability of milk powder depends on
 A. Size B. Density
 C. Electrostatic charge D. All of the above
- iv) The vacuum of 760 mm of Hg is equivalent to an absolute pressure of
 A. 101.04 kPa B. 1.5 kPa C. 10.04 kPa D. 0.0 kPa
- v) In 4- effect milk evaporator, the temperature of the milk under boiling in the first effect will be around
 A. 50°C B. 75°C C. 100°C D. 135°C
- vi) The air velocity in the ducts to convey powder is in the range of
 A. 20-25 m/s B. 50-75 m/s C. 60-70 m/s D. 100-120 m/s
- vii) The major defect found in the condensed milk during storage is
 A. Age-gelation B. Lactose-crystallization
 C. Gas-production D. None of above
- viii) In Infant milk food the permitted source of iron is
 A. Ferric tannate B. Ferrous sulphate
 C. Ferrous cyanate D. Ferric chloride
- ix) The body of the whole milk powder particles is
 A. Hollow B. Dense C. Compact D. Porous
- x) The type of milk powder used for recombined evaporated milk is
 A. Extra low-heat powder B. Medium heat powder
 C. High heat powder D. Low heat powder
- xi) Low heat skim milk powder should have
 A. less than 1.5 WPNI B. less than 6.0 WPNI
 C. less than 4.5 WPNI D. more than 6.0 WPNI

- xii) As per BIS, whole milk powder shall have titratable acidity not more than
 A. 1.5 % lactic acid B. 1.2 % lactic acid
 C. 1.6 % lactic acid D. 1.4 % lactic acid
- xiii) As per FSSAI, Infant milk food should have minimum
 A. 12 % milk proteins B. 15 % milk proteins
 C. 20 % milk proteins D. 18 % milk proteins
- xiv) For milk drying in a roller dryer, the milk remains in contact with roller for about
 A. $\frac{1}{4}$ of a turn of the drum B. $\frac{1}{2}$ of a turn of the drum
 C. $\frac{3}{4}$ of a turn of the drum D. Full turn of the drum
- xv) The unit of milk viscosity is
 A. Pa B. Pa.s C. m/s D. m^3/s
- xvi) Butter powder contains fat content of about:
 A. 40% B. 90% C. 75% D. None of the above
- xvii) The property of powder that confers the ease with which the powder particles move with respect to each other is known as:
 A. Flowability B. Sinkability C. Dispersability D. Angle of repose
- xviii) Maillard reaction may lead to significant loss of the following in milk based product:
 A. Lysine B. Arachidonic acid C. Methionine D. Oleic acid
- xix) Sandiness in condensed milk may be due to
 A. Incorrect cooling and crystallization B. Excessively low temperature of storage
 C. Excessive sugar ratio D. All the above
- xx) The factors influencing the economy of evaporator system is
 A. Number of effects B. Temperature of effect
 C. Both (A) and (B) D. Condensing system

Q.2 Define the following (Any five out of seven questions)

- A)** (1) Case Hardening
 (2) Heat stability of milk
 (3) Solubility
 (4) Pilot sterilization test
 (5) Agglomeration
 (6) Atomizer
 (7) WPNI

B) Answer the following (Any five out of seven questions) (05)

- (1) Write the causes of browning discolouration in evaporated milk
 (2) Enlist types of atomizer are available for spray drying of milk.
 (3) Give the length and diameter of drum in roller drying
 (4) What are the objectives of forewarming of milk during manufacturing of SCM?
 (5) What is age thickening?
 (6) Write the purpose of addition of seeding materials into condensed milk?
 (7) What is free fat?

Q.3 Writes short notes (Any five out of six questions) (10)

- (1) Describes the method of agglomeration of powder
 (2) What are the physico-chemicals changes during manufacturing of dried milk powder?
 (3) Enlist defeat of evaporated milk. Write cause and prevention of any one.
 (4) Give standard for A. SMP (FAASI) B. Malted milk food.
 (5) Give heat classification of the powder
 (6) What are the advantages and disadvantage of roller dried powder

Q.4 Long Question ((Any three out of four questions) (15)

- (1) Describes the properties of milk powder
 (2) Explain the processing steps for sweetened condensed manufacturing with the help of flow diagram.
 (3) Discuss the manufacturing of infant Milk foods
 (4) What is 'Instantization'. Describes powder recovery system in brief