



Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech-FT(NEW)/SEM-6/FT-601/2013

2013

**FOOD PROCESS TECHNOLOGY - III
(MILK & MILK PRODUCT)**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

$10 \times 1 = 10$

- i) The origin of Chhana podo—a famous sweet meat, is
 - a) Orissa
 - b) Tamil Nadu
 - c) Rajasthan
 - d) West Bengal.
- ii) Phenyl alanine is a precursor of
 - a) Glycine
 - b) Tryptophan
 - c) Arginine
 - d) Tyrosine.



- iii) The presence of buffalo milk in cow milk is tested by an immunological assay method known as
- a) Hansa Test
 - b) Hotis Test
 - c) Baudouin Test
 - d) Turbidity Test.
- iv) Example of semi-essential amino acid is
- a) proline
 - b) histidine
 - c) arginine
 - d) leucine.
- v) Tyrosine is the precursor of
- a) skin pigment
 - b) hair pigment
 - c) all of these
 - d) none of these.
- vi) The average freezing point depression of Indian cow milk is
- a) 0.547°C
 - b) 0.492°C
 - c) 0.572°C
 - d) None of these.



- vii) The pH range of buffalo milk is
- a) 6.7 – 6.8
 - b) 6.2 – 6.4
 - c) 6.0 – 6.2
 - d) 7.2 – 7.4.
- viii) Titratable acidity of milk is expressed in terms of
- a) citric acid
 - b) acetic acid
 - c) lactic acid
 - d) none of these.
- ix) Specific gravity of milk can be measured by using
- a) pycnometer
 - b) lactometer
 - c) both (a) and (b)
 - d) none of these.
- x) Fat is present in milk in the form of
- a) suspension
 - b) solution
 - c) emulsion
 - d) none of these.



- xi) QAC is used in dairy industry as
 - a) surface active agent
 - b) sequestering agent
 - c) sanitizing agent
 - d) none of these.
- xii) As per PFA minimum fat % in ice-cream is
 - a) 30
 - b) 25
 - c) 35
 - d) 10.
- xiii) Adulteration of water in milk can be determined by
 - a) Lactometer
 - b) Kjeldhal Method
 - c) Centrifugal separation
 - d) MBRT test.
- xiv) Low fat content than the specified level in milk can indicate the addition of
 - a) Water
 - b) Skim milk
 - c) Both (a) & (b)
 - d) Removal of cream from milk.
- xv) The yellowish colour of butter is due to
 - a) carotene
 - b) riboflavin
 - c) xanthophyll
 - d) none of these.

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GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Differentiate between khoa and chhana. Give at least two examples of sweet meat prepared from each of them. $3 + 2$
3. Discuss about the nutritive value of whey. Mention the benefits of consumption of whey on human health. $2 + 3$
4. Briefly explain the milk clotting mechanism by rennet action during cheese processing.
5. What is Phosphatase test ? Explain the principle involved in this test. How is this test performed ? $1 + 2 + 2$
6. Differentiate between the following : $2 \times 2 \frac{1}{2} = 5$
 - a) WPC (Whey Protein Concentrate) and WPI (Whey Protein Isolate)
 - b) Micro-filtration and Ultra-filtration technique.
7. Discuss the terms 'probiotics' and prebiotics'. Briefly describe the therapeutic values of fermented milk. $2 + 3$



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. With a schematic diagram describe the HTST pasteurization system of milk. What is CIP ? What is milk stone and how can it be effectively removed from dairy equipment ?

$8 + 2 + 5$

9. With example classify cheese on the basis of moisture content. What is the difference between 'green cheese' and 'ripened cheese' ? Write about the changes taking place during curing of cheese. Write the purpose of cheddaring and cooking of cheese curd. What is the difference between soft cheese and paneer ?

$3 + 2 + 5 + 3 + 2$

10. What do you mean by the term 'Platform test' ? Discuss briefly about various platform tests done on the reception dock of a dairy plant. How are total solid and solid not fat content of milk calculated from lactometer reading ? Briefly discuss butter churning process.

$2 + 5 + 2 + 6$

11. Classify whey proteins. How proteins can be recovered from whey ? How do you prepare yogurt in cups ? What is 'syneresis' ?

$2 + 5 + 6 + 2$



12. Discuss about different atomization processes of spray drying system. What do you mean by the term 'instantization' of milk powder ? What is 'Pilot Sterilization Test' and how is it performed ? What is the difference between 'weaning food' and 'infant food' ? Give a comparison between roller dried powder and spray dried powder. $3 + 2 + 5 + 2 + 3$
13. a) What do you mean by 'overrun' of ice cream and how is it calculated ? Write the difference between freezing and hardening process of ice cream. Discuss about textural defects of ice cream.
- b) Prepare 150 kg ice cream mix as per ISI specification using whole milk (3% fat & 8% SNF), cream (32% fat & 6% SNF), skim milk powder (0.5% fat & 95% SNF), sugar and carrageenan. $3 + 2 + 5 + 5$
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