

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMEISTER END THEORY EXAMINATION, B. TECH. (D.T.) DEGREE COURSE 2018-19**

Semester	: V (V Dean)	Academic Year	: 2018-2019
Course No.	: DT- 507	Course Title	: By Product Technology
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Friday, 11/01/2019	Time	: 11.00 to 13.00 Hrs.

- Note :**
- 1) All questions from **Section 'A'** are compulsory.
  - 2) Solve **Any Three** 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) Mineral content in acid whey is approximately .....
  - a) 1.0 to 1.2 %
  - b) 0.7 to 0.8 %
  - c) 0.4 to 0.5 %
  - d) 0.3 to 0.2 %
- ii) Maximum precipitation of casein occurs at pH .....
  - a) 3.7
  - b) 4.1
  - c) 4.6
  - d) 5.2
- iii) Which of the following enzyme is originated from plant .....
  - a) Pepsin
  - b) Ficin
  - c) Alcalase
  - d) Esperase
- iv) Trypsin types are characterized by a preference of amino acid with .....
  - a) Aromatic group
  - b) Free amino group
  - c) Free carboxyl group
  - d) Basic group
- v) How much amount of protein can be recovered by the process of manufacture of co-precipitates?
  - a) 76%
  - b) 82%
  - c) 90%
  - d) 97%

B) Define the following. (05)

- i) Reverse Osmosis
- ii) pH
- iii) BOD
- iv) Ultra-filtration
- v) By-product

Q. 2 A) Give reasons for the following. (05)

- i) BOD of whey is higher than 40,000mg/kg.
- ii) Iso-electric point of casein is 4.6.
- iii) Whey vit is inoculated with 1 % of yeast culture.
- iv) Why it is difficult to wash the butter-milk casein during drying process?
- v) Over heating of casein results in browning.

- B) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) Ghee residue is rich in phospholipids.
  - ii) Yield of acid casein is 2.8 to 3.2 % in skim milk.
  - iii) Baker's cheese is originated in USA.
  - iv) Gammelost cheese originated in USA.
  - v) More common crystalline form of lactose is  $\beta$ -lactose hydrate.

### SECTION – 'B'

- Q. 3 A) Explain the method of preparation of acid casein. (05)  
B) Write the industrial and food application of casein. (05)
- Q. 4 A) Define by product, give its classification and write about the manufacturing of condensed whey. (05)  
B) Discuss the functional properties of WPC and WPI. (05)
- Q. 5. Explain the following
- A) Ultra-filtration (03)
  - B) Microfiltration (03)
  - C) Reverse osmosis and Nano-filtration (04)
- Q. 6 Explain the following with flow diagram.
- A) Sodium caseinate (03)
  - B) Co-precipitate (03)
  - C) Casein hydrolycates. (04)
- Q. 7 Explain in detail utilization, composition and functional properties of ghee residue and butter milk? (10)

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