

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B.Tech. (D.T.)**

Semester	: III (V Dean)	Academic Year	: 2021-2022
Course No.	: DE-309	Course Title	: Dairy Engineering
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Monday, 04/04/2022	Time	: 02 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) Hydrogen peroxide is used as a sterilization medium for the cartons at a concentration of .....
  - a) 15-20%
  - b) 21-30%
  - c) 31-35%
  - d) 36- 40%
- ii) The temperature combination for UHT processing is .....
  - a) 135-150°C for few minutes
  - b) 135-150°C for few seconds
  - c) 80-90°C for few minutes
  - d) 80-90°C for few seconds
- iii) The role of aluminum foil in the aseptic carton is .....
  - a) To give rigidity to the carton
  - b) To act as moisture barrier
  - c) To give attractive appeal
  - d) To act as sealing material
- iv) For a hermetic cream separator, the type of gear mechanism in drive is .....
  - a) Bevel gear
  - b) Spur gear
  - c) Helical gear
  - d) Worm and worm wheel
- v) The discs in cream separator are placed at an angle of .....
  - a) 20°
  - b) 30°
  - c) 45°
  - d) 75°

B) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)

- i) Tri-processor is used for separation, standardization and clarification of milk.
- ii) Homogenizer is actually a low pressure centrifugal pump having a sanitary head upon which the homogenizing valves are mounted.
- iii) Bactofuge is used to filter the milk so as make it free from extraneous materials.
- iv) The process of heat treatment under different temperatures in stainless steel chamber is known as vacreation.
- v) In two stage homogenization, second stage is used for further subdivision of fat globules.

Q. 2 A) Write the names only for the following. (05)

- i) Parts of clarifier.
- ii) Parts of self desludging centrifuge.
- iii) Sections of can washer.
- iv) Parts of form fill seal machine.
- v) Parts of homogenizer.

(P.T.O.)



- B) Define the following: (05)
- i) Sterilization
  - ii) Clarification
  - iii) Aseptic packaging
  - iv) Sanitization
  - v) Regeneration efficiency

**SECTION - 'B'**

- Q. 3 A) Describe the working of HTST pasteurizer. (05)  
B) Describe the sanitary features of dairy equipment. (05)
- Q. 4 A) Describe the working of packaging machine based on form fill sealing principle. (05)  
B) Explain different types of agitators with neat diagram. Give methods to avoid formation of vortex. (05)
- Q. 5 A) Explain the working of self desludging cream separator. (03)  
B) Write in short about care and maintenance of homogenizers. (03)  
C) Explain different types of indirect heating systems used in UHT processing. (04)
- Q. 6 A) Explain the different types of gaskets used in dairy industry. (03)  
B) Discuss the various factors affecting the effectiveness of cleaning. (03)  
C) Calculate the regeneration efficiency of HTST pasteurizer with given temperature program: (i) Inlet temperature of raw milk: 5 °C, (ii) Temperature after regeneration: 62 °C and (iii) pasteurization temperature: 73 °C. (04)
- Q. 7 What is homogenization? Give the constructional detail of a homogenizer with a neat diagram. Discuss forces involved in splitting of fat globules in a homogenizing valve. (10)

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