

Semester	: III (V Dean)	Academic Year	: 2018-2019
Course No.	: DE-309	Course Title	: Dairy Engineering
Credits	: 2+1-3	Total Marks	: 50
Day & Date	: Saturday, 12/01/2019	Time	: 15.00 to 17.00 Hrs.

Note :

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

- Sterilization
- Sanitization
- Bactofugation
- Clarification
- Aseptic filling

(P.T.O.)

- B) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) Nitrile rubber can withstand temperature upto 50°C .
 - ii) Milk silos are horizontal tanks for milk storage.
 - iii) The purpose of second stage homogenization is to reduce the size of fat globules.
 - iv) Cyclone separators are used to separate milk powder particles from air.
 - v) Helical ribbon agitators are used for viscous products.

SECTION - 'B'

- Q. 3. A) Explain about various fittings used in pipe system in dairy plant. (05)
B) Discuss the process of Bactofugation. (05)
- Q. 4. A) Explain the working and constructional features of homogenizer. (05)
B) Milk is pasteurized in HTST unit @ 15,000 kg per hour having counter flow. The raw milk temperature is 5°C and pasteurization temperature is 73°C . If the upstream regeneration efficiency is 92%. Calculate. (05)
i) Heating load on heating section.
ii) Heat transfer area in heating section, if $U = 1200 \text{ W/m}^2\text{C}$ and hot water inlet and outlet temperature are 80°C and 72°C respectively.
- Q. 5. A) Explain the constructional difference between paddle, propeller and turbine agitator. (03)
B) Define the principle of centrifugal separation. (03)
C) Explain the construction of a cream separator along with a labeled diagram. (04)
- Q. 6. A) Discuss the direct milk sterilization process in brief. (03)
B) What is CIP? Explain points to be considered in formation of a CIP circuit. (03)
C) Explain CIP procedure followed in cleaning of tanks and pasteurizer. (04)
- Q. 7. Explain about steps in cleaning procedure of can washing. Explain difference in steps of manual can washing and mechanical can washing. Explain about points to be considered in maintenance of can washers. (10)
