

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, B.TECH. (D.T.) DEGREE COURSE 2017-18

Semester	: VII (New Syllabus)	Academic Year	: 2017-2018
Course No.	: DE-713	Course Title	: Dairy Plant Design and Layout
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Monday, 08.01.2018	Time	: 11.00 to 13.00 Hrs.

- Note :**
- 1) All questions from **Section 'A'** are compulsory.
 - 2) Solve **Any Five** 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) If all the processing equipment and machines are arranged according to the sequence of operations of a product the layout is known as
 - a) Product layout
 - b) Process layout
 - c) Fixed position layout
 - d) Combination layout
- ii) The capacity of small milk plants
 - a) Below 20,000 LPD
 - b) Below 80,000 LPD
 - c) Above 20,000 LPD
 - d) 20,000 – 80000 PD
- iii) Pasteurized milk is stored at
 - a) - 4 °C
 - b) - 25 °C
 - c) 5 – 10 °C
 - d) 3 – 4 °C
- iv) Space required for HTST pasteurizer for small dairy plant is
 - a) 5 – 15 m²
 - b) 20 – 25 m²
 - c) 30 – 50 m²
 - d) 50 – 65 m²
- v) In dairy plant, drainage channels should be at least from wall.
 - a) 05 cm
 - b) 15 cm
 - c) 25 cm
 - d) 50 cm

B) Do as directed. (05)

- i) Define term "Air Curtain".
- ii) What is indication of Blue Colour code for pipeline in dairy plant?
- iii) What is the full form of HACCP?
- iv) What is the height of RMRD?
- v) What is the ratio of milk to water in fluid milk processing plant?

Q. 2 A. Answer in one line. (05)

- i) Which cream separator is generally used in dairy plant?
- ii) Give the formula for Reynold number for fluid flowing through the pipe line.
- iii) Elaborate FSSAI.
- iv) What flooring you would recommend for processing section?
- v) State the difference between site and location.

(P.T.O.)

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

- F** i) Fluid milk processing plant involves manufacture of products such as cheese, butter, milk powder etc. *Fluid milk = Liquid milk processing plant*
- T** ii) Powder milk plant requires 3 kg of steam per kg of powder.
- T** iii) Air lock prevents the contact of external air to internal air of cold store and it works as buffer.
- T** iv) Refrigeration plant of dairy contributes approx. 40 to 50% of total electricity load.
- T** v) In HTST pasteurizer, 0.2-0.3 kg of steam is required to pasteurize 1 kg of milk.

SECTION - 'B'

- Q. 3. Explain in detail about the three tier structure of "Anand Pattern". (06)
- Q. 4 Explain the different types of dairy plant layouts with neat sketches. (06)
- Q. 5 Explain in detail about the space requirement for different sections of dairy plant. (06)
- Q. 6 a) Discuss the special characteristics of dairy industry. (02)
 b) Which are the major three factors contributing milk as perishable. (02)
 c) Why fluid milk plants are located in milk shed region. (02)
- Q. 7 a) Give in detail the classification of Dairy plants. (03)
 b) What are the important factors to be considered while site selection of dairy plant. (03)
- Q. 8 a) What types of floorings are used for the various sections in dairy plant? (02)
 b) Write in short about "Refrigeration machinery room" in dairy plant. (02)
 c) Estimate the minimum capacity of can washer, milk weighing balance, dump tank and milk pump required to receive the 1,20,000 litres of milk per day. The milk is received in two shift .i.e. 60% in the morning and 40% at the evening. All the milk is received through can. (02)
- Q. 9 a) How to finalize the capacity of utility generating devices. (02)
 b) Give the objectives of Ventilation in dairy plant. Enlist the different methods of ventilations. (04)
