Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Regular & Supplementary Examinations Feb-2021

DAIRY AND FOOD ENGINEERING

(Agricultural Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Explain the factors which are affecting composition of milk		6M
	b	Write about the colostrums.		6M
		OR		
2	a	Write short notes on density and specific gravity of milk. Also explain the determination of specific gravity by Lactometer.		8M
	b	If the Lactometer reading becomes 31.0 at 66°F, what is the corrected specific gravity of milk?		4M

UNIT-II

3	a	Draw the flow chart of HTST pasteurization system and explain the flow process.		8M
	b	How the temperature, flow rate and pressure are controlled in HTST pasteurisers?		4M
		OR		
4	a	Draw the process flow chart for preparation of pasteurized milk		6M
	b	Draw the process flow chart for preparation of sterilised milk (In-bottle sterilization).		6M

UNIT-III

5	a	What are the different types of butter making process?		4M
	b	Briefly describe (i) continuous floatation churns (ii) ripening of cream (iii) working of butter (iv) main constituents of butter		8M
		OR		
6	a	What are the basic requirements of food packaging?		5M
	b	Explain the packaging of milk, cultured milk, concentrated milk and dried milk products.		7M

UNIT-IV

7		A single effect evaporator is required to concentrate a solution from 10% solids to 30% solids at the rate of 250kg of feed per hour. If the pressure in the evaporator is 77kPa absolute, and if steam is available at 200kPa gauge, calculate the quantity of steam required f er hour and the area of heat transfer surface if the overall heat transfer coefficient is 1700 Jm-2S-IoC-I. Assume that the temperature of the feed is 18°C and that the boiling point of the solution under the pressure of 77kPa absolute is 91°C. Assume, also, that the specific heat of the solution is the same as for water, that is 4.186 x 103 Jkg-I0C-I, and the latent heat of vaporization of the solution is the same as that for water under the same conditions.		12M

From steam tables, condensing temperature of steam at 200kPa gauge (300kPa abs.) is 134°C and latent heat 2164 kJkg-I; the condensing temperature at 77kPa (abs.) is 91°C and latent heat is 2281 kJ kg-1.

OR

8	a	Discuss about boiling point elevation.	5M
	b	What are the factors affecting the selection of an evaporator, rate of heat transfer, economy of operation and evaporation process?	7M

UNIT-V

9	a	Enlist the types of extraction processes. Explain single stage batch processing.	5M
	b	Explain multistage countercurrent extraction with neat sketch.	7M

OR

10	a	Discuss leaching (solid-liquid extraction) of foods.	6M
	b	Explain the supercritical fluid extraction with neat sketch.	6M

*** END ***