

2019
2nd Sem.

Roll No. _____

M. Tech. Food Technology
II Semester Examination 2019
Course Code: MFTC-203
Course Title: Food Engineering-II

Time: 3 hours

Max Marks: 75

Attempt all the questions. Marks are mentioned against each question

- Q1. Briefly answer the following (1x15)
- (a) The F_{121} value of a process is 2 min, equal to 5D. Calculate the Do.
 - (b) Toricells theorem
 - (c) Convert 36inch/s to cm/s?
 - (d) Theory of continuity.
 - (e) Define drag coefficient?
 - (f) Define Reynolds number.
 - (g) Husners Ratio?
 - (h) Shear rate?
 - (i) Reynolds number.
 - (j) Specific heat
 - (k) LVE stands for.....
 - (l)is responsible for higher final viscosity.
 - (m) Formula of Power law model.
 - (n) D value
 - (o) Dynamic and static rheology
- Q2. Answer any three of the following (5x3)
- (a) Explain the working of Monometer.
 - (b) Discuss the engineering properties of foods in details.
 - (c) Explain glass transition.
 - (d) Enlist the various machineries used in fruit and vegetable processing?
 - (e) Derive Bernoullis Theorem and Venturi meter equation.
- Q3. Answer any three of the following (5X3)
- (a) Discuss the working of air blast, plate and immersion freezers.
 - (b) Derive the Darcy-Weisbach Equation.
 - (c) What do you understand by thermal properties, Cryogenic freezing, pre-cooling and freezing point depression?
 - (d) Derive the equation for microbial growth kinetics.
 - (e) Derive Poiseuille equation?

Q4. Answer any three of the following

(5x3)

- What do you understand by Food Rheology? Discuss its significance in Food industry.
- Discuss the Rheological classification of foods and various Rheological Models?
- Explain Pasting Properties.
- Draw the plant layout of any food plant along with diagram codes.
- Draw the code diagram for: Heat exchanger, conveyor, pump, valve, fan system, spray dryer, closed tank, cone & plate.

Q5. Answer any three of the following

(5x3)

- The D_{110} value and Z value of a process was found to be 7 minutes and 10°C respectively. If the population after 300 seconds was found to be 1.12×10^5 . Calculate the initial population, reaction rate, and population after 6 and 10 minutes.
- A non compressible fluid is of density $1.12 \times 10^2 \text{ g/ml}$ flows through a pipe of diameter 10 inch. If the pressure difference is $8.2 \times 10^3 \text{ Pa}$, calculate the volumetric and mass flow rate of the fluid (in SI units). Viscosity of the fluid is 1 Pas.
- Two fluids A and B flowing through separate pipes of diameter 10cm and 5cm respectively, Calculate the Reynolds number in each case if the fluid density is 1000 kg/m^3 and 1024 kg/m^3 respectively. Given: the flow rate is 20 cm/s and viscosity of 1000cp for both cases.
- A solution is drained from the bottom of a large tank. The depth of the pipe is 100cm from the upper layer of solution. If the flow is streamline calculate the velocity of the flow.
- A monometer is filled with air, water, oil, mercury and gasoline, as per the figure given below. Calculate the pressure difference.

