



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Technology) 2024 Admission
II Semester Final Examination – August 2025

FPE 1203

Food Thermodynamics (2+1)

Marks: 50
Time: 2 hours

I Fill in the blanks

(10x1=10)

1. Thermodynamics is an axiomatic science which deals with the relations among heat, work and properties of system which are in
2. A finite quantity of matter or a prescribed region of space is
3. The heat that changes the temperature of a substance when added to or abstracted from it is termed as
4. The point at which solids, liquids and gases phases co-exists is called as
5. Those boilers in which the heat transfer surfaces are all contained within a steel shell are classified as type of boiler.

Match the following

6. Angular velocity	a. 9.81 N
7. 1 kgf	b. 210 kJ/min
8. 1 Watt	c. 8314 J/kg-mole-°K
9. Refrigeration 1 ton	d. rad/s
10. Universal gas constant	e. 0.860 kcal/h

II Write short notes on ANY FIVE of the following

(5x2=10)

1. Describe first law of thermodynamics.
2. Write Kelvin-Planck and Clausius Statement.
3. What is superheated steam and how it is formed?
4. Write four characteristics of entropy.
5. Define enthalpy and dew point temperature.
6. State Charle's law and Boyle's law.
7. Describe the Zeroth law of thermodynamics.

III Answer ANY FIVE of the following

(5x4=20)

1. Describe Thermodynamic equilibrium and write about thermal, mechanical and chemical equilibrium.
2. Explain working of fire-tube boiler.
3. Write neat diagram of Psychrometric chart and indicate various properties.
4. For the same compression ratio, show that the efficiency of Otto cycle is greater than that of Diesel cycle.
5. Write p-T (Pressure-Temperature) diagram for a pure substance and describe.
6. Write and describe Carnot cycle.
7. Write merits and demerits of air refrigeration system.

IV Write an essay on ANY ONE of the following

(1x10=10)

1. With neat diagram explain formation of steam.
2. Write about preheater, economizer, air preheater used in boiler.
