

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END THEORY EXAMINATION  
B.Tech. (Food Technology)

[ICAR Sixth Deans' Committee Recommended Syllabus]

Semester	: II (New)	Term	: Second	Academic Year	: 2024-25
Course No.	: FE-124	Title	: Food Thermodynamics		
Credits	: 3(2+1)	Time	: 10:00 to 13:00 hrs.	Total Marks	: 80
Day & Date	: Wednesday, 02.07.2025				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 Explain different types of systems and processes in Thermodynamics.
- Q.2 Enlist different types of thermodynamic cycles and explain Rankine cycle with diagram.
- Q.3 Describe in detail about psychrometric processes involved in air conditioning.
- Q.4 Explain in detail the principal parts of steam generator.
- Q.5 Define Steam. State the various properties of steam.
- Q.6 Differentiate between Fire tube boiler and Water tube boiler.
- Q.7 Draw and explain the phase diagram of water with its curve.
- Q.8 Write in brief about the boiler mountings and state its functions.
- Q.9 Write short notes on:
  - a) Zeroth Law of Thermodynamics
  - b) Second Law of Thermodynamics
- Q.10 Derive an expression for measurement of height of boiler chimney.

SECTION 'B'

- Q.11 Define the following terms:
  - 1) Boiler chimney
  - 2) Enthalpy
  - 3) Drought
  - 4) Ideal gas
  - 5) Isochoric process
  - 6) Wet bulb depression
  - 7) Psychrometrics
  - 8) Adiabatic process

(P.T.O.)

Q.12 Fill in the blanks:

- 1) \_\_\_\_\_ is the mass of water vapor present in 1 kg of dry air.
- 2) The temperature and pressure at which all three phases (solid, liquid and vapor) coexist in equilibrium, is termed as \_\_\_\_\_.
- 3) The SI unit of Entropy is \_\_\_\_\_.
- 4) The triple point of water is \_\_\_\_\_ °F.
- 5) \_\_\_\_\_ cycle is an idealized thermodynamic cycle used to understand the maximum possible efficiency of a heat engine.
- 6) \_\_\_\_\_ is a graphical representation that shows the relationship between the water content of a material and its equilibrium relative humidity at a constant temperature.
- 7) The latent heat of vaporization for water is approximately \_\_\_\_\_ calories per gram.
- 8) The Indian Boiler Regulation Act, primarily enacted in the year, \_\_\_\_\_.

