Unit–2

Law of Thermodynamics and Availability

1. The second law of thermodynamics deals with:
A) Conservation of mass
B) Direction of heat transfer
C) Fluid motion
D) Chemical reactions
Answer: B) Direction of heat transfer

2. According to Clausius statement, heat naturally flows from:
A) Cold body to hot body
B) Hot body to cold body
C) Equal temperature bodies
D) None
Answer: B) Hot body to cold body

3. Kelvin–Planck statement is related to:
A) Heat engine
B) Refrigerator
C) Compressor
D) Boiler
Answer: A) Heat engine

4. Entropy is represented by:
A) H
B) U
C) S
D) T
Answer: C) S

5. The unit of entropy is:
A) kJ/kg·K
B) Joule
C) Pascal

D) Watt
Answer: A) kJ/kg·K

6. Carnot cycle consists of:
A) Two isothermal and two adiabatic processes
B) Four isothermal processes
C) Two constant pressure processes
D) Four adiabatic processes
Answer: A) Two isothermal and two adiabatic processes

7. Availability is also called:
A) Efficiency
B) Exergy
C) Enthalpy
D) Work
Answer: B) Exergy

8. COP stands for:
A) Coefficient of Performance
B) Constant of Pressure
C) Cycle Operating Process
D) Compression Output Power
Answer: A) Coefficient of Performance

9. Refrigerator works by:
A) Producing heat
B) Transferring heat from low to high temperature
C) Increasing pressure only
D) Reducing work
Answer: B) Transferring heat from low to high temperature

10. Maximum efficiency is achieved by:
A) Diesel cycle
B) Otto cycle
C) Carnot cycle

D) Rankine cycle
Answer: C) Carnot cycle

Part B: Fill in the Blanks

1. The second law of thermodynamics determines the _____ of heat flow.
Answer: direction

2. Entropy is denoted by _____.
Answer: S

3. Heat cannot flow naturally from _____ body to hot body.
Answer: cold

4. Carnot cycle is an example of a _____ cycle.
Answer: reversible

5. Availability is also called _____.
Answer: exergy

6. COP of refrigerator means coefficient of _____.
Answer: performance

7. Heat engine converts heat into _____.
Answer: work

8. Entropy change for reversible process is equal to _____ divided by temperature.
Answer: heat transfer

9. The efficiency of Carnot cycle depends on _____ of source and sink.
Answer: temperature

10. Refrigerator removes heat from _____ temperature region.
Answer: low