

AMPR03 BASICS OF THERMODYNAMICS AND THERMAL ENGINEERING

UNIT-1 BASIC THERMODYNAMICS

- 1.1 Systems, Zeroth law, first law. Steady flow energy equation.
- 1.2 Heat and work transfer in flow and nonflow processes.
- 1.3 Second law, Kelvin-Planck statement - Clausius statement - Concept of Entropy, Clausius inequality, Entropy change in non-flow processes.
- 1.4 Properties of gases and vapours.

UNIT-2 AIR CYCLE AND COMPRESSORS

- 2.1 Otto, Diesel, Dual combustion and Brayton cycles.
- 2.2 Air standard efficiency.
- 2.3 Mean effective pressure, Reciprocating compressors.

UNIT-3 STEAM AND JET PROPULSION

- 3.1 Properties of steam- Rankine cycle- Steam Nozzles
- 3.2 Simple jet propulsion system- Thrust rocket motor- Specific impulse.

UNIT-4 REFRIGERATION AND AIR-CONDITIONING

- 4.1 Principles of Psychrometry and refrigeration- Vapour compression
- 4.2 Vapour absorption types- Coefficient of performance, Properties of refrigerants
- 4.3 Basic Principle and type's Air conditioning.

UNIT-5 HEAT TRANSFER

- 5.1 Conduction in parallel, radial and composite wall
- 5.2 Basics of Convective heat transfer
- 5.3 Fundamentals of Radiative heat transfer
- 5.4 Flow through heat exchangers.

References Books:

1. Ramalingam K.K. "Thermodynamics", Sci-Tech Publications, 2006
2. Holman.J.P., "Thermodynamics", 3rd Ed. McGraw-Hill, 2007.
3. Venwylen and Sontag, "Classical Thermodynamics", Wiley Eastern, 1987
4. Arora C.P, "Thermodynamics", Tata McGraw-Hill, New Delhi, 2003.