RCETMECHAC05 - Refrigeration and air conditioning

Course outcomes:

- Illustrate the fundamental principles and applications of refrigeration and air conditioning system
- Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration systems
- Present the properties, applications and environmental issues of different refrigerants
- Calculate cooling load for air conditioning systems used for various
- Operate and analyze the refrigeration and air conditioning systems.

Syllabus:

Unit I

Applications of air-conditioning and refrigeration, energy usage in air-conditioning/buildings Introduction of Refrigeration and Heat Pump: Carnot cycle, modification in reversed Carnot cycle, vapour compression cycle, actual vapour compression cycle. Designation of refrigerants, Selection of refrigerants, Ozone Depletion Potential (ODP) and Global Warming (GW), Montreal and Kyoto protocols Total Equivalent Warming Index (TEWI), Azeotropic and zeotropic mixtures, alternative to existing CFC and HCFC refrigerants.

Unit II

p-h and T-s diagrams – deviations from theoretical cycle – subcooling and super heating- effects of condenser and evaporator pressure on COP- multipressure system -low temperature refrigeration – Cascade systems – problems. Equipments: Type of Compressors, Condensers, Expansion devices, Evaporators.

Unit III

Other Refrigeration Systems Working principles of Vapour absorption systems and adsorption cooling systems – Steam jet refrigeration- Ejector refrigeration systems- Thermoelectric refrigeration- Air refrigeration – Magnetic – Vortex and Pulse tube refrigeration systems.

Unit IV

For complete syllabus and results, class timetable and more Its a light weight, easy to use, no images, no pdfs platform to make students life easier.

Unit V

Air Conditioning Systems and Load Estimation Air conditioning loads: Outside and inside design conditions; Heat transfer through structure, Solar radiation, Electrical appliances, Infiltration and ventilation, internal heat load; Apparatus selection; fresh air load, human comfort and IAQ principles, effective temperature and chart, calculation of summer and winter air conditioning load; Classifications, Layout of plants; Air distribution system; Filters; Air Conditioning Systems with Controls: Temperature, Pressure and Humidity sensors, Actuators and Safety controls.

Reference Text Books

1. Analysis and Performance of Fibre Composites, BD Agarwal and LJ Broutman.