# AMAC-12 SORPTION HEATING AND COOLING SYSTEMS

**UNIT-1 INTRODUCTION**

1.1 Carnot cycle- Refrigerator
1.2 Heat Pump- Heat Transformer,
1.3 Working Fluids, Properties
1.4 Thermodynamic Processes with Mixtures

**UNIT-2 LIQUID SORPTION SYSTEMS**

2.1 Water- LiBr Systems; Single Effect,
2.2 Double Effect Systems,
2.3 Types- Analysis of Advanced Cycles for Refrigeration System
2.4 Heat Pumps and Heat Transformers.
2.5 Ammonia- Water Systems
2.6 Single Effect- GAX Systems.

**UNIT-3 PUMPLESS AND SOLID SORPTION SYSTEM**

3.1 Diffusion Absorption Systems
3.2 Bubble Pump Systems- Solid Sorption Systems
3.3 Working Fluids- Single and Multi-effect Systems
3.4 Metal Hydride Heating and Cooling Systems
3.5 Applications and Issues.

**UNIT-4 COMPONENT DESIGN**

4.1 Design of Generator
4.2 Absorber- Condenser- Evaporator- Solution
4.3 Heat Exchanger- Reactors- Rectifiers- Overall System Balance.

**UNIT-5 APPLICATIONS**

5.1 Energy Storage- Combined power and cooling
5.2 Solar Cooling- Low grade Heat Utilization
5.3 Economics of Sorption Systems
5.4 Sorption refrigeration Systems for Climate Change Mitigation.

**References Books:**


1. Herold K. E., Radermacher R. and Klein S. A., Absorption Chillers and Heat Pumps CRC Press, London (1996).
2. Alefeld G. and Radermacher R. , Heat Conversion Systems , CRC Press , London (1994).
3. ASHRAE Hand Book–HVAC Systems & Equipment 2008 , ASHRAE Inc. Atlanta