

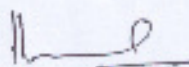
| Discipline : MECHANICAL ENGG | Semester : 5th | Name of the Teaching Faculty: PRAVAT KUMAR SWAIN |
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| Subject: R&AC(TH-5) | No. of days/per week class allotted: 04 | Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15 |
| Week | Class Day | Theory Topics |
| 1 ST | 1 ST | 1. AIR REFRIGERATION CYCLE. • Definition of refrigeration and unit of refrigeration. |
| | 2 ND | • Definition of COP, Refrigerating effect (R.E) |
| | 3 RD | • Principle of working of open and closed air system of refrigeration |
| | 4 TH | • Calculation of COP of Bell-Coleman cycle and numerical on it |
| 2 ND | 1 ST | • Calculation of COP of Bell-Coleman cycle and numerical on it |
| | 2 ND | 2. SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM • schematic diagram of simple vapors compression refrigeration system |
| | 3 RD | • Types • Cycle with dry saturated vapors after compression. |
| | 4 TH | • Cycle with wet vapors after compression. |
| 3 RD | 1 ST | • Cycle with superheated vapors after compression |
| | 2 ND | • Cycle with superheated vapors before compression. |
| | 3 RD | • Cycle with sub cooling of refrigerant |
| | 4 TH | • Representation of above cycle on temperature entropy and pressure enthalpy diagram |
| 4 TH | 1 ST | • Numerical on above (determination of COP, mass flow) |
| | 2 ND | • Numerical on above (determination of COP, mass flow) |
| | 3 RD | • Discussion of probable question |
| | 4 TH | 3. VAPOUR ABSORPTION REFRIGERATION SYSTEM • Simple vapor absorption refrigeration system |
| 5 TH | 1 ST | • Practical vapor absorption refrigeration system |
| | 2 ND | • COP of an ideal vapor absorption refrigeration system |
| | 3 RD | • Numerical on COP. |
| | 4 TH | • Numerical on COP. |
| 6 TH | 1 ST | • Numerical on COP. |
| | 2 ND | • CLASS TEST |
| | 3 RD | 4. REFRIGERATION EQUIPMENTS REFRIGERANT COMPRESSORS • Principle of working and constructional details of reciprocating and rotary compressors |
| | 4 TH | • Centrifugal compressor only theory Important terms |
| 7 TH | 1 ST | • Hermetically and semi hermetically sealed compressor. |

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| | 2 ND | CONDENSERS <ul style="list-style-type: none"> Principle of working and constructional details of air cooled and water cooled condenser |
| | 3 RD | <ul style="list-style-type: none"> Heat rejection ratio. Cooling tower and spray pond. |
| | 4 TH | EVAPORATORS <ul style="list-style-type: none"> Principle of working and constructional details of an evaporator. |
| 8 TH | 1 ST | <ul style="list-style-type: none"> Types of evaporator. |
| | 2 ND | <ul style="list-style-type: none"> Bare tube coil evaporator, finned evaporator, shell and tube evaporator. |
| | 3 RD | 5. REFRIGERANT FLOW CONTROLS, REFRIGERANTS & APPLICATION OF REFRIGERANTS <ul style="list-style-type: none"> Expansion valves Capillary tube Automatic expansion valve Thermostatic expansion valve |
| | 4 TH | REFRIGERANTS <ul style="list-style-type: none"> Classification of refrigerants |
| 9 TH | 1 ST | <ul style="list-style-type: none"> Desirable properties of an ideal refrigerant. Designation of refrigerant. |
| | 2 ND | <ul style="list-style-type: none"> Thermodynamic Properties of Refrigerants. Chemical properties of refrigerants. |
| | 3 RD | <ul style="list-style-type: none"> commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 |
| | 4 TH | <ul style="list-style-type: none"> Substitute for CFC |
| 10 TH | 1 ST | <ul style="list-style-type: none"> Applications of refrigeration cold storage |
| | 2 ND | <ul style="list-style-type: none"> dairy refrigeration |
| | 3 RD | <ul style="list-style-type: none"> ice plant water cooler |
| | 4 TH | <ul style="list-style-type: none"> frost free refrigerator |
| 11 TH | 1 ST | 6. PSYCHOMETRICS & COMFORT AIR CONDITIONING SYSTEMS <ul style="list-style-type: none"> Psychometric terms |
| | 2 ND | <ul style="list-style-type: none"> Adiabatic saturation of air by evaporation of water Psychometric chart and uses. |
| | 3 RD | <ul style="list-style-type: none"> Psychometric processes Sensible heating and Cooling |
| | 4 TH | <ul style="list-style-type: none"> Cooling and Dehumidification Heating and Humidification |
| 12 TH | 1 ST | <ul style="list-style-type: none"> Adiabatic cooling with humidification Total heating of a cooling process |
| | 2 ND | <ul style="list-style-type: none"> SHE, BPF. |
| | 3 RD | <ul style="list-style-type: none"> Adiabatic mixing Problems on above. |
| | 4 TH | <ul style="list-style-type: none"> Effective temperature and Comfort chart |

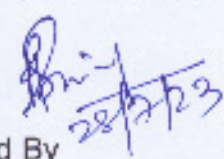
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| 13 TH | 1 ST | <ul style="list-style-type: none"> • Problems on above. |
| | 2 ND | <ul style="list-style-type: none"> • Discussion of probable question |
| | 3 RD | <ul style="list-style-type: none"> • CLASS TEST |
| | 4 TH | 7. AIR CONDITIONING SYSTEMS <ul style="list-style-type: none"> • Factors affecting comfort air conditioning. . • Equipment used in an air-conditioning |
| 14 TH | 1 ST | <ul style="list-style-type: none"> • Classification of air-conditioning system |
| | 2 ND | <ul style="list-style-type: none"> • Winter Air Conditioning System |
| | 3 RD | <ul style="list-style-type: none"> • Summer air-conditioning system. |
| | 4 TH | <ul style="list-style-type: none"> • Numerical on above |
| 15 TH | 1 ST | <ul style="list-style-type: none"> • Numerical on above |
| | 2 ND | <ul style="list-style-type: none"> • Numerical on above |
| | 3 RD | <ul style="list-style-type: none"> • Discussion of probable question |
| | 4 TH | <ul style="list-style-type: none"> • CLASS TEST |

Learning Resources:

01. REFRIGERATION AND AIRCONDITIONING BY C.P ARRORA, TMH
02. REFRIGERATION AND AIRCONDITIONING BY R.S. KHURMI & J.K. GOPTA, S. CHAND
03. REFRIGERATION AND AIRCONDITIONING BY P.L. BALLANY, KHANNA PUBLISHER
04. REFRIGERATION AND AIRCONDITIONING BY DOMKUNDRAN AND ARORA, DHANPAT RAY AND SON


28/7/23

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