

5th SEMESTER MECHANICAL ENGINEERING(2021)

SUBJECT- REFRIGERATION AND AIR CONDITIONING

TOTAL PERIOD-60

NAME OF FACULTY: MANOJ KUMAR SAHOO

THEORY-4P/WEEK

| Sl No. | week | Day | Topics to be covered |
|---------------|-----------------|---------------------|---|
| 1 | 1 st | 1 st day | Definition of refrigeration and unit of refrigeration |
| | | 2 nd day | Definition of COP, Refrigerating effect (R.E) |
| | | 3 rd day | Principle of working of open and closed air system of refrigeration. |
| | | 4 th day | Calculation of COP of Bell-Coleman cycle and numerical on it. |
| Sl No. | week | Day | Topics to be covered |
| 2 | 2 nd | 1 st day | Simple vapour compression refrigeration system Introduction |
| | | 2 nd day | Schematic diagram of simple vapors compression refrigeration system. |
| | | 3 rd day | Cycle with dry saturated vapors after compression. |
| | | 4 th day | Cycle with wet vapors after compression. |
| Sl No. | week | Day | Topics to be covered |
| 3 | 3 rd | 1 st day | Cycle with superheated vapors after compression. |
| | | 2 nd day | Cycle with superheated vapors before compression. |
| | | 3 rd day | Cycle with sub cooling of refrigerant |
| | | 4 th day | Representation of above cycle on temperature entropy and pressure enthalpy diagram and Numericals |
| Sl No. | week | Day | Topics to be covered |
| 4 | 4 th | 1 st day | Simple vapour absorption refrigeration system |
| | | 2 nd day | Practical vapour absorption refrigeration system |
| | | 3 rd day | COP of an ideal vapour absorption refrigeration system |
| | | 4 th day | Numerical on COP. |
| Sl No. | week | Day | Topics to be covered |
| 5 | 5 th | 1 st day | Principle of working and constructional details of reciprocating and rotary compressors. |
| | | 2 nd day | Centrifugal compressor only theory |
| | | 3 rd day | Hermetically and semi hermetically sealed compressor |
| | | 4 th day | Principle of working and constructional details of air cooled and water cooled condenser |
| Sl No. | week | Day | Topics to be covered |
| 6 | 6 th | 1 st day | Heat rejection ratio |
| | | 2 nd day | Cooling tower and spray pond of condenser |
| | | 3 rd day | Principle of working and constructional details of an evaporator |
| | | 4 th day | Types of evaporator |
| Sl No. | week | Day | Topics to be covered |

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| 7 | 7 th | 1 st day | EXPANSION VALVES |
| | | 2 nd day | Capillary tube and Automatic expansion valve |
| | | 3 rd day | Thermostatic expansion valve |
| | | 4 th day | Classification of refrigerants |
| Sl No. | week | Day | Topics to be covered |
| 8 | 8 th | 1 st day | Desirable properties of an ideal refrigerant. |
| | | 2 nd day | Thermodynamic Properties of Refrigerants. |
| | | 3 rd day | Chemical properties of refrigerants. |
| | | 4 th day | Commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 |
| Sl No. | week | Day | Topics to be covered |
| 9 | 9 th | 1 st day | Applications of refrigeration |
| | | 2 nd day | cold storage,dairy refrigeration & water cooler |
| | | 3 rd day | Frost free refrigerator |
| | | 4 th day | Psychometric terms |
| Sl No. | week | Day | Topics to be covered |
| 10 | 10 th | 1 st day | Adiabatic saturation of air by evaporation of water |
| | | 2 nd day | Psychometric chart and uses |
| | | 3 rd day | Psychometric processes |
| | | 4 th day | Sensible heating and Cooling |
| Sl No. | week | Day | Topics to be covered |
| 11 | 11 th | 1 st day | Cooling and Dehumidification |
| | | 2 nd day | Heating and Humidification |
| | | 3 rd day | Adiabatic cooling with humidification |
| | | 4 th day | Total heating of a cooling process |
| Sl No. | week | Day | Topics to be covered |
| 12 | 12 th | 1 st day | SHF, BPF |
| | | 2 nd day | Adiabatic mixing |
| | | 3 rd day | Problems on above |
| | | 4 th day | |
| Sl No. | week | Day | Topics to be covered |
| 13 | 13 th | 1 st day | AIR CONDITIONING SYSTEMS |
| | | 2 nd day | Factors affecting comfort air conditioning. |
| | | 3 rd day | Equipment used in an air-conditioning |

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| | | 4 th day | Classification of air-conditioning system |
| Sl No. | week | Day | Topics to be covered |
| 14 | 14 th | 1 st day | Winter Air Conditioning System |
| | | 2 nd day | Summer air-conditioning system. |
| | | 3 rd day | Numerical Problem solving |
| | | 4 th day | Numerical Problem solving |
| Sl No. | week | Day | Topics to be covered |
| 15 | 15 th | 1 st day | Summer air-conditioning system. |
| | | 2 nd day | Numericals problem solving |
| | | 3 rd day | Doubt clearance and Revision |
| | | 4 th day | Doubt clearance and Revision |