

**Academic Lesson Plan for Winter semester-2024-2025**

Name of the teaching faculty: MANOJ KUMAR SAHOO Department: Mechanical Engineering Semester: 5th Subject: Refrigeration &AC

No. of periods per week: 4 Total Periods: 60

End semester exam: 80 Class test: 20

Total Marks: 100

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| **Sl.**  **No.** | **Week** | **Period** | **Topic to be covered** |
| 1. | 1st | 1st | Definition of refrigeration and unit of refrigeration |
| 2. | 2nd | Definition of COP, Refrigerating effect(R.E) |
| 3. | 3rd | Principle of working of open and closed air system of refrigeration. |
| 4. | 4th | Calculation of COP of Bell-Coleman cycle |
| 5. | 2nd | 1st | Solve Numerical |
| 6. | 2nd | Schematic diagram of simple vapors compression refrigeration system’ |
| 7. | 3rd | AboutTypes |
| 8. | 4th | Cycle with dry saturated vapors after compression. |
| 9. | 3rd | 1st | Cycle with wet vapors after compression. |
| 10. | 2nd | Cycle with superheated vapors after compression. |
| 11. | 3rd | Cycle with superheated vapors before compression. |
| 12. | 4th | Cycle with sub cooling of refrigerant |
| 13. | 4th | 1st | Representation of above cycle on temperature entropy and pressure enthalpy diagram |
| 14. | 2nd | Solve Numerical |
| 15. | 3rd | Solve Numerical |
| 16. | 4th | Simple vapor absorption refrigeration system |
| 17. | 5th | 1st | Practical vapor absorption refrigeration system |
| 18. | 2nd | Analysis. |
| 19. | 3rd | COP of an ideal vapor absorption refrigeration system |
| 20. | 4th | Analysis |
| 21. | 6th | 1st | Numerical on COP. |
| 22. | 2nd | Solve Numerical |

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| 23. |  | 3rd | About Refrigerant Compressor |
| 24. | 4th | Principle of working and constructional details of reciprocating and rotary compressors. |
| 25. | 7th | 1st | Centrifugal compressor only theory&Important terms. |
| 26. | 2nd | Hermetically and semi hermetically sealed compressor |
| 27. | 3rd | Condenser Principle of working and constructional details of air cooled and water cooled condenser |
| 28. | 4th | Heat rejection ratio&Cooling tower and spray pond |
| 29. | 8th | 1st | Evaporater. Principle of working and constructional details of an evaporator. Types of evaporator. |
| 30. | 2nd | Bare tube coil evaporator, finned evaporator, shell and tube evaporator. |
| 31. | 3rd | Expansion Valve. Capillary tube &Automatic expansion valve |
| 32. | 4th | Thermostatic expansion valve |
| 33. | 9th | 1st | Refrigerant. Classification of refrigerants |
| 34. | 2nd | Desirable properties of an ideal refrigerant. |
| 35. |  | 3rd | Designation of refrigerant. |
| 36. | 4th | Thermodynamic Properties of Refrigerants. |
| 37. | 10th | 1st | Chemical properties of refrigerants. |
| 38. | 2nd | Commonly used refrigerants,R-11,R-12,R-22,R-134a,R-717 |
| 39. | 3rd | Substitute for CFC |
| 40. | 4th | About Application |
| 41. | 11th | 1st | About Psychometric terms |
| 42. | 2nd | Adiabatic saturation of air by evaporation of water |
| 43. | 3rd | Psychometric chart and uses. |
| 44. | 4th | Psychometric processes |
| 45. | 12th | 1st | Sensible heating and Cooling &Cooling and Dehumidification |
| 46. | 2nd | Heating and Humidification & Adiabatic cooling with humidification .Total heating of a cooling process |
| 47. | 3rd | SHF, BPF  Adiabatic mixing |
| 48. | 4th | Solve numerical |
| 49. | 13th | 1st | Solve numerical |
| 50. | 2nd | AIR CONDITIONING SYSTEMS  Effective temperature and Comfort chart |
| 51. | 3rd | Factors affecting comfort air conditioning.. |

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| 52. |  | 4th | Equipment used in an air-conditioning. |
| 53. | 14th | 1st | Do |
| 54. | 2nd | Classification of air-conditioning system |
| 55. | 3rd | Winter Air Conditioning System |
| 56. | 4th | Summer air-conditioning system. |
| 57. | 15th | 1st | Do |
| 58. | 2nd | Solve Numerical |
| 59. | 3rd | Do |
| **60.** | **4th** | Do |

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