



GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

Academic Lesson Plan for Winter semester- 2021-2022

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

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

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

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

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