



DEPARTMENT OF PHYSICS
SRI Y. N. COLLEGE (AUTONOMOUS)
(Affiliated to Adikavi Nannaya University)
Accredited by NAAC with 'A' grade with a CGPA of 3.40
Recognized by UGC as 'College with Potential for Excellence'
NARSAPUR-534275, W.G.Dist. AP



Certificate Course of Refrigeration and Air Conditioning
For 2025-2026 Batch (w.e.f. 2014-2015)

Unit – 1:- Fundamentals of Thermodynamics

Thermodynamic Systems – Classification of Systems, Definition of State, Path Process Cycle, properties, work, heat, thermal energy, specific heat, enthalpy, flow work – Point and path functions.

Unit – 2:- Laws of thermodynamics

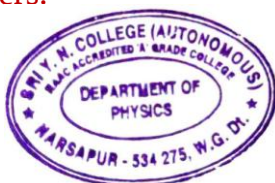
Zeroth law, 1st law, 2nd law of thermodynamics. Laws of perfect gases – Boyle's law, Charles's law, Avagadro's law, Joule's law, C_p , C_v relations, Isothermal, Isobaric, Isochoric, Adiabatic Process, Polytropic – pre expansion throttling process.

Unit – 3:- Fundamentals of Refrigeration

Introduction - Definition of Refrigeration – Methods of refrigeration – Applications Of refrigeration, Unit of refrigeration – Coefficient of performance (C.O.P) power required per ton of refrigeration. Air refrigeration systems – Reversed Carnot Cycle, Bell Coleman Cycle – Problems – Open system versus closed system of air refrigeration.

Unit – 4:- Air Conditioning Systems

Room Air Conditioners – Installation – Split Units Fans – Classes of Fans, Types of Fans, Centrifugal Fans, Axial-Flow fans, Fan performance Air Distribution System – Air Filtration, Air Filters.




HEAD OF THE DEPARTMENT



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MODEL QUESTION PAPER

Time 2 hrs

Max Marks: 50

SECTION – A

Answer any two of the following

2 X 10 = 20 M

1. Explain the terms “System”, “Surroundings”, “heat”, “work” and Thermal Energy.
2. Describe the working of Carnot’s Engine and derive an expression for its efficiency.
3. Draw P-V and T-O diagrams of a reversed Carnot Cycle applied to a Refrigerating machine and obtain an expression for its C.O.P.
4. Mention the types of Fans.

SECTION – B

Answer any Five of the following

5 X 4 = 20 M

5. Explain “Plow Work-Point” and “path functions”.
6. Define Enthalpy and Specific heat.
7. Derive the relation between C_p and C_v .
8. State and explain second law of thermodynamics.
9. Distinguish between a heat pump and a refrigerator.
10. What are the applications of refrigeration?
11. Explain the important role of Air filters in air conditioning.
12. Explain Split Unit.

SECTION – C

Answer all the questions.

5 X 2 = 10

13. What is path process cycle?
14. Define Isobaric and Isothermal processes.
15. What is the unit of refrigeration?
16. Define First law of thermodynamics.
17. Define Air Filtration.

HEAD OF THE DEPARTMENT

