LESSON PLAN

SUB: RAC

BRANCH:- MECHANICAL ENGG.

SEMESTER: 4TH
NAME OF FACULTY: SABYASACHI JAGANNATH MISHRA

GOVERNMENT POLYTECHNIC, BHADRAK

SESSION:2025-26

Hod ,Mechanical 20/12/25

Academic Co-ordinator

Principal
Govt. Polytechnic, Bhadrak
30.12.25

ACADEMIC LESSON PLAN FOR REFRIGERATION & AIR CONDITIONING(TH-4a)

Discipline: **MECHANICAL E NGG.**	Semester: 4th	NameoftheTeaching Faculty: **SABYASACHI JAGANNATH MISHRA**
Subject: **REFRIGERATION & AIR CONDITIONING**	No. of days/per week class allotted: **03**	Semester From date:**22/12/2025**To Date: 18/04/2026
		No. of Weeks: **15**
Week	Class Day	**Theory Topics**
1ST	1ST	Introduction to Refrigeration: Definition of Refrigeration;
	2ND	Refrigerating effect- unit of refrigeration- Coefficient of performance;
	3RD	Types of Refrigeration-Ice, dry ice, Steam jet, Throttling, Liquid nitrogen refrigeration;
2ND	1ST	Types of Refrigeration-Ice, dry ice, Steam jet, Throttling, Liquid nitrogen refrigeration;
	2ND	Types of Refrigeration-Ice, dry ice, Steam jet, Throttling, Liquid nitrogen refrigeration;
	3RD	Carnot refrigeration Cycle;
3RD	1ST	Air refrigeration- Bell - Coleman cycle, PV& TS diagram
	2ND	Air refrigeration- Bell - Coleman cycle, PV& TS diagram
	3RD	Advantage and disadvantages in air refrigeration; Simple problems
4TH	1ST	Simple problems
	2ND	Refrigeration systems: Basic Components, Flow diagram of working of Vapour compression cycl
	3RD	Representation of the vapour compression cycle on P-H, T-S & P-V Diagram;
5TH	1ST	Expression for Refrigerating effect, work done and power required;
	2ND	Types of Vapour Compression cycle; Effects of super heating and under cooling, its advantages and disadvantages;
	3RD	Simple Vapour absorptions cycle and its flow diagram;
6TH	1ST	Simple Electrolux system for domestic units;
	2ND	Comparison of Vapour absorption and vapour compression system;
	3RD	Simple problems on vapour compression cycle.
7TH	1ST	Simple problems on vapour compression cycle.
	2ND	Simple problems on vapour compression cycle.
	3RD	Refrigeration equipment: Compressor - types of compressors;

8TH	1ST	Hermetically sealed and Semi hermetically sealed compressor;
	2ND	Condensers - Air Cooled, water cooled
	3RD	Natural and forced draught cooling system
9TH	1ST	Advantages and disadvantages of air cooled and water cooled condensers
	2ND	Evaporators -natural, convection,
	3RD	Forced convection types.
10TH	1ST	Discussion of questions.
	2ND	Refrigerant flow controls: Capillary tube; Automatic Expansion valve;
	3RD	Thermo- static expansion valve;
11TH	1ST	High side and low side float valve;
	2ND	Solenoid valve; Evaporator pressure regulator.
	3RD	Application of refrigeration: Slow and quick freezing;
12TH	1ST	Cold storage and Frozen storage;
	2ND	Dairy refrigeration;
	3RD	Ice making industry; Water coolers.
13TH	1ST	**Air conditioning:** Introduction to Air conditioning; Factors affecting Air conditioning;
	2ND	Psychometric chart and its use;
	3RD	Psychometric process-sensible heating and cooling,
14TH	1ST	Humidifying and dehumidifying; Adiabatic saturation process;
	2ND	Equipment used in air conditioning cycle; Air conditioning units and plants.
	3RD	**Refrigeration and Air-conditioning tools:** Tools used in refrigeration and Air Conditioner installation;

15TH	1ST	Installation procedure; Faults in refrigeration and air conditioning system; Servicing procedure.
	2ND	Discussion of previous year questions.
	3RD	Discussion of previous year questions.

REFERENCES:

1. Refrigeration and Air Conditioning – Sadhu Singh, Khanna Book Publishing Co., New Delhi

2. Refrigeration and Air Conditioning – S. Domakundawar, Dhanpat Rai publications.

3. Refrigeration and Air Conditioning – A.S.Sarao& G.S. Gabi, 6th edition, Satya Prakashan publications, New Delhi, 2004.

4. Principles of Refrigeration – Roy J.Dossat, 5th edition, Pearson Publications, 2001.

5. Refrigeration and Air Conditioning – M.Zakria Baig, Premier/ Radiant Publishing House.

6. Refrigeration and Air Conditioning – C.P Arora, Tata McGraw Hill Education, 2000.

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