**Lesson Plan**

Name of the Faculty : Smt. PREETI

Discipline : Mechanical Engg.

Semester : 5th

Subject : R.A.C

Lesson plan duration : 17 weeks (from September, 2022 to January, 2023)

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| **Week** | **Theory** | | **Practical** | |
| Lecture Day | Topic (including assignments /tests) | Practical Day | Topic |
| Week 1 | 1st | **Fundamentals of Refrigeration-** Introduction to refrigeration, and air conditioning | 1st | Introduction to the subject, why we should study it? |
| 2nd | Meaning of refrigerating effect, units  of refrigeration |
| 3rd | COP, Methods of refrigeration. Methods of refrigeration |
| Week 2 | 1st | Natural system and artificial system. | 1st | Identify various tools of refrigeration kit and practice in cutting, bending, flaring,  swaging and brazing of tubes. |
| 2nd | **Vapour Compression System-** Introduction, principle, function |
| 3rd | parts and necessity of vapour compression system, T- S and p– H charts, |
| Week 3 | 1st | Dry, wet and superheated compression | 1st | Practice |
| 2nd | Effect of sub cooling, super heating, |
| 3rd | actual vapour compression system. |
| Week 4 | 1st | Introduction to air refrigeration system, advantage and disadvantage of air refrigeration over vapour compression system. | 1st | Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers. |
| 2nd | Revision |
| 3rd | Assignment & Mock Test |
| Week 5 | 1st | **Refrigerants-**Functions, classification of refrigerants | 1st | Identify various parts of a refrigerator and window air conditioner. |
| 2nd | Properties of R - 717, R – 22, R–134 and CO2. |
| 3rd | Properties of ideal refrigerant, Selection of refrigerant |
| Week 6 | 1st | **Vapour Absorption System-** Introduction, principle and working of simple absorption system | 1st | Practice |
| 2nd | Domestic Electrolux refrigeration systems. |
| 3rd | Solar power refrigeration system |
| Week 7 | 1st | Advantages and disadvantages of solar power refrigeration system over vapour compression system | 1st | To find COP of Refrigeration system |
| 2nd | Test |
| 3rd | **Refrigeration Equipment-** Compressor – Function |
| Week 8 | 1st | Various types of compressors | 1st | To detect trouble/faults in a refrigerator/window type air conditioner |
| 2nd | Condenser & its Function |
| 3rd | Various types of condensers Evaporator & its Function |
| Week 9 | 1st | Evaporator & its Function Various types of evaporators | 1st | Practice |
| 2nd | Expansion Valve & its Function thermostatic expansion valve, Capillary tube |
| 3rd | low side and high side float valves |
| Week 10 | 1st | Application of various expansion valves | 1st | Charging of a refrigerator/window type air conditioner.  . |
| 2nd | Safety Devices-Thermostat |
| 3rd | Overload protector, LP, HP cut out switch. |
| Week 11 | 1st | **Psychrometry-** Definition, importance, specific humidity, relative humidity | 1st | Study of cut section of single cylinder compressor |
| 2nd | Degree of saturation, DBT, WBT, DPT, |
| 3rd | Sensible heat, latent heat, Total enthalpy of air |
| Week 12 | 1st | **Applied Psychrometry and Heat Load Estimation**. Psychometric chart ,Various lines | 1st | Practice |
| 2nd | psychometric process , By pass factor, room sensible heat factor |
| 3rd | effective room sensible heat factor, grand sensible heat factor |
| Week 13 | 1st | Heating and humidification , ADP, room DPT. | 1st | Visit to an ice plant, cold storage plant, central air conditioning plant |
| 2nd | cooling and dehumidification |
| 3rd | window air-conditioning |
| Week 14 | 1st | split type air-conditioning | 1st | Practice & VIVA |
| 2nd | car air-conditioning |
| 3rd | central air-conditioning |
| Week15 | 1st | **Latest development in refrigeration and air conditioning:-** Inverter technology | 1st | Practice & VIVA |
| 2nd | auto-defrosting |
| 3rd | blast cooling |
| Week 16 | 1st | star rating | 1st | Viva question preparation |
| 2nd | Previous year question paper will be solved |
| 3rd | Previous year question paper will be solved |
| Week 17 | 1st | REVISION | 1st | Viva question preparation |
| 2nd | REVISION |
| 3rd | REVISION |