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| Discipline: Mechanical engineering | Semester : 4th Semester 2022-23 | Name of the Teaching faculty: Smt. C R Meher(Lect.) |
| Subject : THERMAL2 | No. of Days/Week Class Allotted: 60 | Semester from date: 14/ 02/2023 to date: 27/ 05/2023 No of weeks :18 |
| Week | Class Day | Theory Topics |
| 1st | 1st | Performance of I.C engine |
| 2nd | Define mechanical efficiency, |
| 3rd | Indicated thermal efficiency |
| 4th | Relative Efficiency, |
| 2nd | 1st | Brake thermal efficiency |
| 2nd | Overall efficiency |
| 3rd | Mean effective pressure |
| 4th | Specific fuel consumption |
| 3rd | 1st | Define air-fuel ratio |
| 2nd | Calorific value of fuel |
| 3rd | Specific fuel consumption |
| 4th | Work out problems to determine efficiencies |
| 4th | 1st | Problem of performance parameter of IC engine |
| 2nd | Problem of performance parameter of IC engine |
| 3rd | Air Compressor |
| 4th | Explain functions of compressor |
| 5th | 1st | Industrial use of compressor air |
| 2nd | Classify air compressor |
| 3rd | Principle of operation air compressor |
| 4th | Describe the parts and working principle of reciprocating Air compressor. |
| 6th | 1st | Explain the terminology of reciprocating compressor such as bore,  stroke |
| 2nd | pressure ratio free air delivered &Volumetric efficiency. |
| 3rd | Derive the work done of single stage |
| 4th | two stage compressor with and without clearance |
| 7th | 1st | Solve simple problems (without clearance only) |
| 2nd | Properties of Steam |
| 3rd | Difference between gas & vapours. |
| 4th | Formation of steam. |
| 8th | 1st | Representation on P-V, T-S, H-S, & T-H diagram. |
| 2nd | Definition & Properties of Steam |
| 3rd | Use of steam table & mollier chart for finding unknown properties |
| 4th | Non flow & flow process of vapour . |
| 9th | 1st | P-V, T-S & H-S, diagram |

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|  | 2nd | Determine the changes in properties & solve simple numerical. |
| 3rd | Steam Generator |
| 4th | Classification & types of Boiler |
| 10th | 1st | Important terms for Boiler |
| 2nd | Comparison between fire tube & Water tube Boiler |
| 3rd | Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) |
| 4th | Boiler Draught (Forced, induced & balanced) |
| 11th | 1st | Boiler mountings & accessories. |
| 2nd | Steam Power Cycles |
| 3rd | Carnot cycle with vapour |
| 4th | Derive work & efficiency of the cycle |
| 12th | 1st | Rankine cycle. 5.3.1 Representation in P-V, T-S & h-s diagram |
| 2nd | Derive Work & Efficiency. |
| 3rd | Effect of Various end conditions in Rankine cycle. |
| 4th | Reheat cycle & regenerative Cycle |
| 13th | 1st | Solve simple numerical on Carnot vapour Cycle & Rankine Cycle |
| 2nd | Heat Transfer |
| 3rd | Modes of Heat Transfer |
| 4th | Conduction Heat Transfer |
| 14th | 1st | Convection Heat Transfer |
| 2nd | Radiation Heat Transfer |
| 3rd | Fourier law of heat conduction and thermal conductivity (k). |
| 4th | Newton’s laws of cooling |
| 15th | 1st | Radiation heat transfer |
| 2nd | Stefan, Boltzmann & Kirchhoff’s law |
| 3rd | Statement Radiation heat transfer |
| 4th | Black body Radiation, Definition of Emissivity |
| 16th | 1st | Absorptive & transmissibility. |
| 2nd | Revision of chapter 1 |
| 3rd | Revision of chapter 2 |
| 4th | Revision of chapter 3 |
| 17th | 1st | Revision of chapter 4 |
| 2nd | Revision of chapter 5 |
| 3rd | Revision of chapter 6 |
| 4th | Discussion of probable Question and Answer of chapter 1and 2 |
| 18th | 1st | Discussion of probable Question and Answer of chapter 3 |
| 2nd | Discussion of probable Question and Answer of chapter 4 |
| 3rd | Discussion of probable Question and Answer of chapter 5 |
| 4th | Discussion of probable Question and Answer of chapter 6 |