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| **Discipline**:- Mechanical Engg. | **Semester**:- **3rd** | **Name of the Teaching Faculty:-**  Er. KAILASH PANDA |
| **Subject**:-  **THERMAL ENGG. -1** | **No. Of days/week class allotted** - **05** | **Semester from**: 01.08.2023  To: 30.11.2023 |
| No. Of weeks:- 17 |
| **Week** | **No. Of Period** | **Theory Topics** |
| 01.08.2023  To  05.08.2023 | 1st | Thermodynamic Systems (closed, open, isolated) |
| 2nd | Thermodynamic properties of a system (pressure, volume, temperature) |
| 3rd | Thermodynamic properties of a system (entropy, enthalpy, Internal energy and units of measurement). |
| 4th | Intensive and extensive properties |
| 5th | Define thermodynamic processes, path, cycle |
| 07.08.2023  To 12.08.2023 | 1st | state, path function, point function |
| 2nd | Thermodynamic Equilibrium |
| 3rd | Quasi-static Process |
| 4th | Conceptual explanation of energy and its sources |
| 5th | Work , heat and comparison between the two. |
| 14.08.2023  To 19.08.2023 | 1st | Mechanical Equivalent of Heat |
| 2nd | INDEPENDENCE DAY |
| 3rd | Work transfer, Displacement work |
| 4th | State & explain Zeroth law of thermodynamics |
| 5th | Limitations of First law of thermodynamics |
| 21.08.2023  To  26.08.2023 | 1st | Application of First law of Thermodynamics |
| 2nd | steady flow energy equation and its application to turbine and compressor |
| 3rd | Introduce to Second law of thermodynamics |
| 4th | Claucius & Kelvin Plank statements |
| 5th | Application of second law in heat engine |
| **Week** | **No. Of period** |  |
| 28.08.2023  To 02.09.2023 | 1st | heat pump, refrigerator |
| 2nd | determination of efficiencies & C.O.P |
| 3rd | RAKSHYA BANDHAN |
| 4th | solve numerical |
| 5th | solve numerical |
| 04.09.2023  To  09.09.2023 | 1st | solve numerical |
| 2nd | Laws of perfect gas |
| 3rd | JANMASTAMI |
| 4th | Boyle’s law, Charle’s law |
| 5th | Avogadro’s law, Dalton’s law of partial pressure |
| 11.09.2023  To  16.09.2023 | 1st | Guy lussac law, General gas equation, |
| 2nd | characteristic gas constant, Universal gas constant. |
| 3rd | Explain specific heat of gas (Cp and Cv) |
| 4th | Relation between Cp & Cv. |
| 5th | Enthalpy of a gas |
| 18.09.2023  To  23.09.2023 | 1st | Work done during a non- flow process |
| 2nd | GANESH CHATURTHI |
| 3rd | NUA KHAI |
| 4th | Application of first law of thermodynamics to various non flow process |
| 5th | Isothermal, Isobaric, Isentropic and polytrophic process |

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| **Week** | **No. Of period** | **Theory Topics** | |
| 25.09.2023  To 30.09.2023 | 1st | Solve simple problems on above. | |
| 2nd | Solve simple problems on above. | |
| 3rd | Free expansion & throttling process | |
| 4th | Internal combustion engine | |
| 5th | BIRTHDAY OF MOHAMMAD | |
| 02.10.2023  To 07.10.2023 | 1st | GANDHI JAYANTI | |
| 2nd | Explain & classify I.C engine |  |
| 3rd | Terminology of I.C Engine such as bore, dead centers | |
| 4th | stroke volume, piston speed &RPM | |
| 5th | Explain the working principle of 2-stroke C.I Engine | |
| 09.10.2023  To 14.10.2023 | 1st | Explain the working principle of 2-stroke S.I Engine | |
| 2nd | Explain the working principle of 4-stroke C.I Engine | |
| 3rd | Explain the working principle of 4-stroke S.I Engine | |
| 4th | Differentiate between 2-stroke & 4- stroke engine | |
| 5th | Differentiate between C.I & S.I engine | |
| 16.10.2023  To  21.10.2023 | 1st | Revision of I.C engine | |
| 2nd | Gas Power Cycle introduces | |
| 3rd | Carnot cycle | |
| 4th | Numerical solve on Carnot cycle | |
| 5th | Otto cycle | |
| 23.10.2023  To 28.10.2023 |  | DRUGA PUJA HOLIDAY | |
| 30.10.2023  To  04.11.2023 | 1st | Derivation of efficiency of Otto cycle | |
| 2nd | Numerical solve on Otto cycle | |
| 3rd | Numerical solve on Otto cycle | |
| 4th | Diesel cycle | |
| 5th | Derivation of efficiency of Diesel cycle | |

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| **Week** | **No.of period** | **Theory Topics** |
| 06.11.2023  To 11.11.2023 | 1st | Numerical solve on Diesel cycle |
| 2nd | Numerical solve on Diesel cycle |
| 3rd | Dual cycle. |
| 4th | Numerical solve on Dual cycle |
| 5th | Revision on gas power cycle |
| 13.11.2023  To  18.11.2023 | 1st | Solve numerical |
| 2nd | Solve numerical |
| 3rd | Solve numerical |
| 4th | Fuels and Combustion |
| 5th | Define Fuel ,Types of fuel, Application of different types of fuel |
| 20.11.2023  To 25.11.2023 | 1st |  |
| 2nd | **ANALA NAVAMI** |
| 3rd | Heating values of fuel. |
| 4th | Quality of I.C engine fuels, Octane number, Cetane number |
| 5TH | Difference between Octane number and Cetane number |
| 27.11.2023  To  30.11.2023 | 1st | **RAHASA PURNIMA** |
| 2nd | previous year question discussion |
| 3rd | previous year question discussion |