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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**: 01.08.2023To: 30.11.2023 |
| No. Of weeks:- 17 |
| **Week** | **No. Of Period** | **Theory Topics** |
| 01.08.2023To05.08.2023 | 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 |
| 07.08.2023To 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. |
| 14.08.2023To 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 |
| 21.08.2023To26.08.2023 | 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** |  |
| 28.08.2023To 02.09.2023 | 1st |  heat pump, refrigerator |
| 2nd |  determination of efficiencies & C.O.P  |
| 3rd | RAKSHYA BANDHAN |
| 4th |  solve numerical  |
| 5th |  solve numerical  |
| 04.09.2023To09.09.2023 | 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 |
| 11.09.2023To16.09.2023 | 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 |
| 18.09.2023To23.09.2023 | 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** |
| 25.09.2023To 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 |
| 02.10.2023To 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 |
| 09.10.2023To 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 |
| 16.10.2023To 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 |
| 23.10.2023To 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** |
| 06.11.2023To 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  |
| 13.11.2023To18.11.2023 | 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 |
| 20.11.2023To 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 |
| 27.11.2023To30.11.2023 | 1st | **RAHASA PURNIMA**  |
| 2nd | previous year question discussion |
| 3rd | previous year question discussion |