GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

Department of Mechanical Engineering

**LESSON PLAN**

**SESSION- 2023-24**

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| --- | --- | --- | --- |
| **Subject: Automobile Engineering and Hybrid Vehicles** | | | |
| **Branch** | **Mechanical Engineering** | **Name of the Faculty** | **Mr. Simanchal Panda** |
| **Course Code** | **TH 2** | **Semester** | **6th Semester** |
| **Total Periods** | **60** | **Examination** | **2023-24** |
| **Theory Period** | **4P/ W** | **Class Test** | **20** Marks |
| **Maximum Marks** | **100 Marks** | **End Semester Examination** | **80** Marks |

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| **Week** | **Class Day** | **Theory Topics** |
| 1st | 1st | Auto mobiles: Definition, need and classification |
| 2nd | Layout of auto mobile chassis with major components (Line diagram) |
| 3rd | Clutch System: Need, Types (Single & Multiple) |
| 4th | Working principle with sketch: Different types of clutches |
| 2nd | 1st | Gear Box: Purpose of gear box, Types |
| 2nd | Construction and working of a 4speed gear box |
| 3rd | Concept of auto matic gear chang ng mechanisms |
| 4th | Propeller shaft: Constructional features and working |
| 3rd | 1st | Differential: Need, Types and Working principle |
| 2nd | Working of differential of 4-wheeler |
| 3rd | Review class |
| 4th | Assignment Evaluation & Class Test |
| 4th | 1st | Braking systems in auto mobiles: Need and types |

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|  | 2nd | Mechanical Brakes |
| 3rd | Hydraulic Brake |
| 4th | Air Brake and Vacuum Brake |
| 5th | 1st | Air assisted Hydraulic Brake |
| 2nd | Review class |
| 3rd | Assignment Evaluation & Class Test |
| 4th | Battery ignition system: Schematic diagram, elements and working |
| 6th | 1st | Magnet ignition system: Schematic diagram, elements and working |
| 2nd | Spark plugs: Purpose, construction and specifications |
| 3rd | Common ignition troubles and its remedies |
| 4th | Conventional suspension system for Rear and Front axle |
| 7th | 1st | Independent suspension system used in cars (coil spring and tension bars) |
| 2nd | Constructional features and working of a telescopic shock absorber |
| 3rd | Review class |
| 4th | Assignment Evaluation & Class Test |
| 8th | 1st | Engine cooling: Need and classification |
| 2nd | Cooling systems of IC engine |
| 3rd | Defects of cooling and their re medial measures |
| 4th | Engine lubrication: Need and classification |
| 9th | 1st | Describe the Lubrication System of I.C. engine |
| 2nd | Review class |
| 3rd | Assignment Evaluation & Class Test |
| 4th | Fuels for Auto mobiles, Fuel Properties |

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| 10th | 1st | Air fuel ratio, Carburetor |
| 2nd | Carburetion process for Petrol Engine |
| 3rd | Multipoint fuel injection system for Petrol Engine |
| 4th | Air fuel ratio of diesel engine. Filter for Diesel engine |
| 11th | 1st | Elements of fuel injection system of Diesel engine |
| 2nd | Working principle of fuel injection system for multi cylinder Engine |
| 3rd | Principle of Fuel feed pump and Fuel Injector for Diesel engine |
| 4th | Review class |
| 12th | 1st | Assignment Evaluation &C lass Test |
| 2nd | Introduction to Electric and Hybrid vehicles |
| 3rd | Social and Environmental importance of Hybrid and Electric Vehicles |
| 4th | Description of Electric Vehicles, operational advantages |
| 13th | 1st | Present performance and applications of Electric Vehicles |
| 2nd | Battery for Electric Vehicles, Battery types and fuel cells |
| 3rd | Hybrid vehicles, Types of Hybrid and Electric Vehicles |
| 4th | Parallel, Series, Parallel and Series configurations |
| 14th | 1st | Drivetrain |
| 2nd | Solar power generation and its application for automobiles |
| 3rd | Solar powered vehicles |
| 5th | Review class |
| 15th | 1st | Assignment Evaluation & Class Test |
| 2nd | Discussion of previous year Question papers |
| 3rd | Discussion of previous year Question papers |
| 4th | Discussion of Possible Questions |