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| **LESSON PLAN** |
| **Name of the Faculty** | Sh. Anand Kumar |   |   |
| **Discipline** | : ELECTRICAL ENGINEERING |  |   |
| **Semester** | : 5th |  |   |
| **Subject** | : ELECTRIC VEHICLE TECHNOLOGY |  |   |
| **Lesson Plan Duration** | : 14 WEEKS(From 20 August 2024 to 29 November 2024) |  |   |
| **Work Load (Lecture/ Practical) per week (in hours)** | : Theory- 02 |  |   |
| : Practical- 02 |   |   |
| **Week** | **Theory** | **Practical** |
| **Lecture Day** | **Topic** | **Practical Day** | **Topic**  |
| **1st** | **1st** | (a) Introduction to the Subject | **1st** | Draw block diagram of Electric Vehicle and identify its various parts. |
| (b) Introduction of the nature of the examination and marks distribution of different topics |
| **2nd** | History and evolution of Electric Vehicle, Policies and regulations related to EV in India. |
| **2nd** | **1st** | Needs and Importance of Electric Vehicle | **1st** | Develop schematic diagram of hybrid electric vehicle and its parts. |
| **2nd** | Advantages and Disadvantages of Electric Vehicles |
| **3rd**  | **1st** | Types of EVs- Battery Electric Vehicle (BEV), PHEV (Plug in Hybrid Electric Vehicle) and Hybrid Electric Vehicle (HEV). | **1st** | Prepare a report on batteries used in EV and HEV |
| **2nd** | Mandatory safety precautions while handling Electric Vehicle |
| **4th** | **1st** | Test of UNIT 01 | **1st** | (a)Technical Quiz for Experiment no. 01, 02 AND 03 Viva Voce and Practical file Evaluation  |
| **2nd** | (BLDC) motor, Switched Reluctance Motor (SRM) and Permanent Magnet SynchronousMotor (PMSM). |
| **5th** | **1st** | Working principle and Control of various motors used in Electric Vehicles- Brushless DC | **1st** | Diagnose, repair and maintenance of batteries used in Electric Vehicle |
| **2nd** | Advantages and disadvantages of above motors. |
| **6th** | **1st** | Test of UNIT 02 | **1st** | Study of various types of braking system used in EV. |
| **2nd** | Electric Vehicle Charger: Charging of Electric Vehicle |
| **7th** | **1st** | Main components of EV Charger, EV Charging Sockets, | **1st** | (a)Technical Quiz for Experiment no. 04, 05 (b) Viva Voce and Practical file Evaluation  |
| **2nd** | Safety precautions for EV charging. |
| **8th** | **1st** | Alternate charging sources – Wireless, Solar, fuel cell, ultra capacitor and flywheel etc. | **1st** | Demonstration of wiring layout of Electric Vehicles using model (if available) or watchingvideos |
| **2nd** | Test of UNIT 03 |
| **9th** | **1st** | Batteries, Construction and working of Lithium Ion batteries,  | **1st** | Prepare test procedure for electrical equipment used in Electric vehicle. |
| **2nd** | Battery capacity in AH &KWH. |
| **10th** | **1st** |  Types of batteries used in EVs--dry batteries, zinc chloride | **1st** | (a)Technical Quiz for Experiment no. 06 and 07 (b) Viva Voce and Practical file Evaluation  |
| **2nd** | lead acid and Lithium Ion |
| **11th** | **1st** | Charging & discharging tests of Li-Ion batteries. | **1st** | List safety procedures and schedule for handling HEVs and EVs. |
| **2nd** | Regenerative braking in EVs. |
| **12th** | **1st** | Safety precautions while handling a high voltage battery, Battery management system, Battery cooling system. | **1st** | Case study of Electric Vehicle available in Indian market and study the technology used init. |
| **2nd** | Test of UNIT 04 |
| **13th** | **1st** | Overview of Hybrid Electric Vehicles | **1st** | Measurement of voltage of battery installed in Electric vehicle. |
| **2nd** | Types of HEV (overview) like gasoline ICE & battery, diesel &battery, Battery & Fuelcell, battery capacitor, battery & flywheel etc. |
| **14th** | **1st** | Comparison with EV, advantages and disadvantages of HEV. | **1st** | (a)Technical Quiz for Experiment no. 08,09 and 10 (b) Viva Voce and Practical file Evaluation  |
| **2nd** | Test of UNIT 05 |
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