Government Polytechnic, Chhapar (Charkhi Dadri)

Electrical Engineering Department

Lesson Plan

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| **Name of Faculty** | Sh. Pardeep Kumar |
| **Discipline** | Electrical Engineering  |
| **Semester** | 3rd  |
| **Subject** | Non-Conventional Energy Sources |
| **Lesson Plan Duration** | From September 2022 to January 2023 |
| **Work load (Theory + Practical) Per Week** | (04+00) |
| **Week** | **Theory** |
| **Lecture Day** | **Topic (including assignment/test)** |
| 1st | 1st | **1.Basic of Energy:-**Classification of Energy-primary and secondary energy |
| 2nd | Commercial and non- commercial energy |
| 3rd | Importance of non-conventional energy sources1 |
| 4th | Present scenario, future prospectus, energy scenario in India |
| 2nd | 5th | Sector-wise energy consumption (domestic, industrial, agriculture etc.) |
| 6th | Taking doubts of the students and to give clarifications on the specificparts they have not understood. |
| 7th | **2.Solar Energy:-**Principle of conversion of solar radiation into heat |
| 8th | Photo-voltaic cell, electricity generation |
| 3rd | 9th | Solar water heaters |
| 10th | Solar furnaces |
| 11th | Solar cookers |
| 12th | Solar lighting |
| 4th | 13th | Solar pumping. |
| 14th | Taking doubts of the students and to give clarifications on the specificparts they have not understood. |
| 15th | **3.Bio-energy:-**Bio-mass conversion technologies- wet and dry processes |
| 16th | —Continued—Bio-mass conversion technologies- wet and dry processes |
| 5th | 17th | Methods for obtaining energy from biomass. |
| 18th | —Continued—Methods for obtaining energy from biomass. |
| 19th | Power generation by using gasifiers |
| 20th | —Continued—Power generation by using gasifiers |

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| 6th | 21st | **4.Wind Energy:-** Wind energy conversion |
| 22nd | Windmills, |
| 23rd | —Continued—Windmills |
| 24th | Conducting class test-1. |
| 7th | 25th | Electricity generation from wind |
| 26th | —Continued—Electricity generation from wind |
| 27th | Types of wind mills |
| 28th | —Continued— Types of wind mills |
| 8th | 29th | Local control |
| 30th | Energy storage |
| 31st | Taking doubts of the students and to give clarifications on the specificparts they have not understood. |
| 32nd | **5.Geo-thermal and Tidal Energy:-**Geo-thermal sources |
| 9th | 33rd | Ocean thermal electric conversion |
| 34th | —Continued— Ocean thermal electric conversion |
| 35th | Open and closed cycles |
| 36th | —Continued— Open and closed cycles |
| 10th | 37th | Hybrid cycles |
| 38th | Prime movers for geo-thermal energy conversion |
| 39th | Steam Generation and electricity generation |
| 40th | —Continued— Steam Generation and electricity generation |
| 11th | 41st | Taking doubts of the students and to give clarifications on the specific parts they have not understood. |
| 42nd | **6.Magneto Hydro Dynamic (MHD) Power Generation** |
| 43rd | —Continued—MHD |
| 44th | Conducting class test-2. |
| 12th | 45th | —Continued—MHD |
| 46th | —Continued—MHD |
| 47th | Checking of Note Book. |
| 48th | **7.Fuel Cells:-**Design and operating principles of a fuel cell |
| 13th | 49th | Principle of a fuel cell |

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|  | 50th | Conversion efficiency |
| 51st | Work output |
| 52nd | e.m.f of fuel cells |
| 14th | 53rd | Applications  |
| 54th | **8.Hydro Energy – Mini & Micro hydro plants:-** Hydro Energy |
| 55th | Mini hydro plants |
| 56th | —Continued— Mini hydro plants |
| 15th | 57th | Micro hydro plants |
| 58th | —Continued— Micro hydro plants |
| 59th | Taking doubts of the students and to give clarifications on the specific parts they have not understood. |
| 60th | Checking of Note Book. |