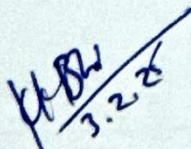


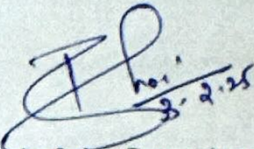
ACADEMIC SESSION: 2024-25

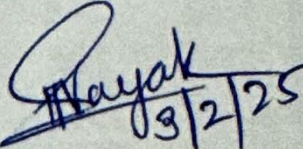
| | | |
|---|--|--|
| Discipline: Electrical Engineering | Semester : 6th | Name of the Teaching Faculty : KIRAN KUMAR BHOI |
| Subject : Renewable Energy | No. of days / week class allotted | Semester From date: 04/02/2025 to 17/05/2025 |
| Week | Class Day | Theory/ Practical Topics |
| 1ST | 1st | Environmental consequences of fossil fuel use. |
| | 2nd | Importance of renewable sources of energy. |
| | 3rd | Sustainable Design and development |
| | 4th | Types of RE sources. |
| 2ND | 1st | Limitations of RE sources, Present Indian and international energy scenario of conventional and RE sources |
| | 2nd | Question discussion |
| | 3rd | Solar photovoltaic system-Operating principle |
| | 4th | Photovoltaic cell concept Cell, module, array, Series and parallel connections |
| 3RD | 1st | Array, Series and parallel connections |
| | 2nd | Maximum power point tracking (MPPT). |
| | 3rd | Classification of energy Sources. |
| | 4th | Extra-terrestrial and terrestrial Radiation |
| 4TH | 1st | Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant. |
| | 2nd | Solar collectors, Types |
| | 3rd | performance characteristics |
| | 4th | Applications: Photovoltaic - battery charger, domestic lighting |
| 5TH | 1st | street lighting, water pumping, |
| | 2nd | Solar cooker |
| | 3rd | Solar Pond. |
| | 4th | Question discussion |
| 6TH | 1st | Introduction to Wind energy |
| | 2nd | Wind energy conversion |

| | | |
|------------------|-----------------|--|
| | 3 rd | Types of wind turbines |
| | 4 th | Aerodynamics of wind rotors. |
| 7 TH | 1 st | Wind turbine control systems; |
| | 2 nd | conversion to electrical power: |
| | 3 rd | Induction and synchronous generators |
| | 4 th | Grid connected and self excited induction generator operation. |
| 8 TH | 1 st | . Constant voltage and constant frequency |
| | 2 nd | Generation with power electronic control. |
| | 3 rd | Single and double output systems |
| | 4 th | Characteristics of wind power plant. |
| 9 TH | 1 st | Question discussion |
| | 2 nd | Energy from Biomass |
| | 3 rd | Biomass as Renewable Energy Source |
| | 4 th | Types of Biomass Fuels |
| 10 TH | 1 st | Solid , gas , liquid |
| | 2 nd | Combustion and fermentation |
| | 3 rd | Anaerobic digestion |
| | 4 th | Types of biogas digester |
| 11 TH | 1 st | Wood gassifier. |
| | 2 nd | Pyrolysis |
| | 3 rd | Applications: Bio gas |
| | 4 th | Bio diesel |
| 12 th | 1 st | Question discussion |
| | 2 nd | Tidal Energy: Energy from the tides |
| | 3 rd | Barrage and Non Barrage Tidal power systems. |
| | 4 th | Ocean Thermal Energy Conversion (OTEC) |
| 13 th | 1 st | Types of Ocean Thermal Energy Conversion (OTEC) |
| | 2 nd | Geothermal Energy |
| | 3 rd | Classification |
| | 4 th | Question discussion |

| | | |
|------------------|-----------------|---------------------------|
| 14 th | 1 st | Hybrid Energy Systems. |
| | 2 nd | Need for Hybrid Systems |
| | 3 rd | Diesel-PV |
| | 4 th | Wind-PV |
| 15 th | 1 st | Microhydel-PV |
| | 2 nd | Electric vehicles. |
| | 3 rd | Hybrid electric vehicles. |
| | 4 th | Question discussion |


 Kiran Kumar Bhoi
 Lect. Stage II
 Electrical Engg.


 Head of the Department
 Electrical Engg.


 Academic Co-ordinator