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| **Lesson Plan** |
| **Name of Faculty** | Satyender |
| **Discipline** | Electrical Engineering |
| **Semester** | 5th  |
| **Subject** | Electrical Power- I |
| **Work load (Theory + Practical ) Per Week** | (04+00) |
| **Week** | **Theory** |
|  | **Day** | **Topics** |
| 1st | 1 | **Unit1 Power Generation** |
| 2 | Main resources of energy, conventional and non-conventional |
| 3 | Different types of power stations, thermal power plant |
| 4 | Hydro Power plant Flow diagrams and operation |
| 2nd | 1 | Gas power plant Flow diagrams and operation |
| 2 | diesel power station Flow diagrams and operation |
| 3 | nuclear power Plant Flow diagrams and operation |
| 4 | comparison of the generating stations on the basis of running cost, site, starting, maintenance |
| 3rd | 1 | Revision/Assignment/ Class Test |
| 2 | **Unit2:Economics of Generation** |
| 3 | Fixed and running cost, load estimation, load curves |
| 4 | Demand factor, load factor, diversity factor |
| 4th | 1 | Power factor and their effect on cost of generation |
| 2 | Simple problems based on above relations |
| 3 | Revision/Assignment/ Class Test |
| 4 | Base load and peak load power stations |
| 5th | 1 | inter-connection of power stations and its advantages |
| 2 | Concept of regional and national grid |
| 3 | Revision/Assignment/ Class Test |
| 4 | **Unit3 Transmission Systems** |
| 6th | 1 | Layout of transmission system, selection of voltage for H.T and L.T lines |
| 2 | advantages of high voltage for Transmission of power in both AC and |
| 3 | Comparison of different systems: AC versus DC for power transmission, |
| 4 | material and sizes from standard tables |
| 7th | 1 | Constructional features of transmission lines |
| 2 | Types of supports |
| 3 | Types of insulators |
| 4 | Types of conductors, Selection of insulators |
| 8th | 1 | conductors, earth wire and their accessories |
| 2 | Transposition of conductors and string efficiency of suspension typeinsulators, Bundle Conductors |
| 3 | Mechanical features of line |
| 4 | Importance of sag, calculation of sag |
| 9th | 1 | effects of wind and ice related problems |
| 2 | Indian electricity rules pertaining to clearance |
| 3 | Electrical features of line: Calculation of resistance, inductance and capacitance |
| 4 | A.C. transmission line, voltage regulation, and concept of corona.Effects of corona and remedial measures |
| 10th | 1 | Transmission Losses |
| 2 | Revision/Assignment/ Class Test |
| 3 | **Unit 4: Distribution System** Lay out of HT and LT distribution system |
| 4 | constructional feature of distribution lines and their erection |
| 11th | 1 | LT feeders and service mains |
| 2 | Simple problems on AC radial distribution system |
| 3 | Determination of size of conductor |
| 4 | Preparation of estimates of HT and LT lines |
| 12th | 1 | Constructional features of LT (400 V), HT (II kV) underground cables |
| 2 | Advantages and disadvantages of underground system with respect to overhead system. |
| 3 | Calculation of losses in distribution system |
| 4 | Faults in underground cables-determine fault location by |
| 13th | 1 | Murray Loop Test, Varley Loop Test |
| 2 | Revision/Assignment/ Class Test |
| 3 | Revision/Problem solution/ Class Test |
| 4 | **Unit 5: Substations**: Brief idea about substations |
| 14th | 1 | Outdoor grid sub-station 220/132 KV, 66/33 KV outdoorSubstations |
| 2 | Pole mounted substations and indoor substation |
| 3 | Layout of 33/11 distribution substation and various auxiliaries |
| 4 | Layout of kV/400V distribution substation and various auxiliaries |
| 15th | 1 | Revision/Assignment/ Class Test |
| 2 | **Unit 6: power factor**, reasons and disadvantages of low power factor |
| 3 | Methods for improvement of power factor using capacitor banks, VAR Static Compensator (SVC) |
| 4 | Revision/Review/Test of old HSBTE Papers |