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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 type  insulators, 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 outdoor  Substations | | |
| 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 | | |