**GBN GOVT POLYTECHNIC NILOKHERI**

**Electrical Engineering Department**

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| **Sh. Rajesh Kumar** |
| **Electrical Engineering** |
| **5th Sem** |
| **Electrical Power- I** |
| **15 Sept2022 to 16 jan2023** |
| **Week** | **Topics** |
| **1st** | **Unit1:introduction to Power Generation** |
| **Main resources of energy, conventional and non-conventional** |
| **Different types of power stations, thermal power plant** |
| **Hydro Power plant Flow diagrams and operation** |
| **2nd** | **Gas power plant Flow diagrams and operation** |
| **diesel power station Flow diagrams and operation** |
| **nuclear power Plant Flow diagrams and operation** |
| **comparison of the generating stations on the basis of running cost, site, starting, maintenance** |
| **3rd** | **Revision/Assignment/ Class Test** |
| **Unit2: Introduction to Economics of Generation** |
| **Fixed and running cost, load estimation, load curves** |
| **Demand factor, load factor, diversity factor** |
| **4th** | **Power factor and their effect on cost of generation** |
| **Simple problems based on above relations** |
| **Revision/Assignment/ Class /sessionalTest** |
| **Base load and peak load power stations** |
| **5th** | **inter-connection of power stations and its advantages** |
| **Concept of regional and national grid** |
| **Revision/Assignment/seminar** |
| **Seminar /doubt** |
| **6th** | **Unit3: Introduction to Transmission Systems** |
| **Layout of transmission system, selection of voltage for H.T and L.T lines** |
| **advantages of high voltage for Transmission of power in both AC and** |
| **Comparison of different systems: AC versus DC for power transmission,** |
| **7th** | **material and sizes from standard tables** |
| **Constructional features of transmission lines, Types of supports,** |
| **Types of insulators** |
| **Class Test** |
| **8th** | **Types of conductors, Selection of insulators** |
| **conductors, earth wire and their accessories** |
| **Transposition of conductors and string efficiency of suspension type****insulators, Bundle Conductors** |
| **Mechanical features of line** |
| **9th** | **Importance of sag, calculation of sag,** |
| **effects of wind and ice related problems** |
| **Indian electricity rules pertaining to clearance** |
| **Electrical features of line: Calculation of resistance, inductance and capacitance** |
| **10th** | **A.C. transmission line, voltage regulation, and concept of corona.****Effects of corona and remedial measures** |
| **Transmission Losses** |
| **Revision/Assignment** |
| **Doubts class** |
| **11th** | **Unit 4: Distribution System Lay out of HT and LT distribution system** |
| **constructional feature of distribution lines and their erection** |
| **LT feeders and service mains, Simple problems on AC radial distribution system** |
| **seminar/ Class/sessional Test** |
| **12th** | **Determination of size of conductor** |
| **Preparation of estimates of HT and LT lines** |
| **Constructional features of LT (400 V), HT (II kV) underground cables** |
| **Advantages and disadvantages of underground system with respect to overhead system.** |
| **13th** | **Calculation of losses in distribution system** |
| **Faults in underground cables-determine fault location by** |
| **Murray Loop Test, Varley Loop Test** |
| **Doubts class /seminar** |
| **14th** | **Revision/Problem solution** |
| **Unit 5: Substations: Brief idea about substations** |
| **Outdoor grid sub-station 220/132 KV, 66/33 KV outdoor****substations** |
| **Pole mounted substations and indoor substation** |
| **15th** | **Layout of 33/11 distribution substation and various auxiliaries** |
| **Layout of kV/400V distribution substation and various auxiliaries** |
| **Revision/Assignment/ Class Test** |
| **Unit 6: power factor, reasons and disadvantages of low power factor** |
| **16th** | **Methods for improvement of power factor using capacitor banks, VAR Static Compensator (SVC)** |
| **Revision/Assignment/ Class /sessionalTest** |
| **Revision/Review/Test of old HSBTE Papers** |
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