

# GUJARAT TECHNOLOGICAL UNIVERSITY

## Diploma in Power Electronics Engineering

Semester: 3

**Subject Code**

**Subject Name** GENERATION AND TRANSMISSION OF ELECTRICAL POWER

Sr. No.	Course content
1.	<b>GENERATION OF ELECTRICAL POWER</b> 1.1 Principle of energy conversion in different power stations. 1.2 Layout / line diagram / flow diagram / accessories used and their working in following power stations. a. Thermal Power Station b. Hydro Power Station c. Nuclear Power Station d. Diesel Power Station 1.3 Load curves and load duration curves. 1.4 Base load and peak load stations. 1.5 Preparation and maintenance of technical reports pertaining to power station operation.
2.	<b>TRANSMISSION OF ELECTRICAL POWER</b> 2.1 Systems of transmission. 2.2 Overhead line supports and insulators. 2.3 Design of overhead transmission line with equal supports. 2.4 Effect of voltage on transmission efficiency, line regulation and volume of conductor materials and selection of economical transmission voltage. 2.5 Sag calculations. 2.6 Performance of short and medium transmission lines (T and method) 2.7 Layout of control room and its equipment at power station. 2.8 Layout and equipment of switchyard at power station. 2.9 Sharing of load through load dispatch centre. 2.10 Importance of PLCC in power transmission.
3.	<b>CONTROL OF POWER STATION</b> 3.1 Voltage control method. 3.2 Speed governor system. 3.3 Starting, loading and unloading of an alternator.
4.	<b>H.V.D.C. TRANSMISSION</b> 4.1 Operational aspects of H.V.D.C. transmission. 4.2 Comparison with A.C system. 4.3 Schematic arrangement with converting and inverting equipment.

5.	<b>NON CONVENTIONAL POWER GENERATION</b> 5.1 Concept and working principle of, (a) MHD generation (b) Wind energy.
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### **LABORATORY EXPERIMENTS :**

1. Draw the line diagram of Thermal Power Station (T.P.S.) and main cycles & explain working of T. P. S.
2. Visit a nearby T.P.S. and prepare its technical report.
3. Visit nearby Hydro Power Station and prepare its technical report.
4. Draw the schematic diagram of Nuclear power station & explain the function of each component.
5. Draw and interpret schematic diagram of Diesel Power Station and explain the following.
  - (a) Fuel system
  - (b) Air inlet system
  - (c) Water cooling system
  - (d) Lubricating system
  - (e) Engine starting system
6. Collect the data from nearest power station/substation for load curve preparation and interpret it.
7. Draw the schematic diagram of M.H.D. power station and explain its working.
8. Demonstrate the transmission line Insulators & supporting structure and prepare a report.
9. Solve problems on string efficiency and sag

### **Reference Books:**

1. Electrical Power by S.L.Uppal
2. Electrical Power system by V.K.Mehta