GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: V
MECHANICAL ENGINEERING

Subject Name: **Conventional Power Engineering (Institute Elective –II)**
Subject Code: **151906**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (I)**
4	0	2	6	70	30	50

Sr. No.	Course content
1	**Thermal Power Plant:** Simple Rankine cycle, General layout of modern thermal power plant, Site selection, Present status of power generation in India.
2	**Steam Turbine :** Principle of operation, Classification, Compounding of steam turbines, Impulse turbine- velocity diagram, Condition for maximum efficiency, Reaction turbine- velocity diagram, Degree of reaction, Parson turbine, Condition for maximum efficiency, Governing of steam turbines.
3	**Gas turbine:** Classification, Open and closed cycle, Actual Brayton cycle, Methods of improving efficiency and specific output – open cycle with regeneration, Reheating and inter cooling, Combined steam and gas turbine plant.
4	**Diesel Power plant :** Outline of diesel power plant, Systems of diesel power plant like air intake system, Fuel system, Cooling system, Exhaust system, lubrication system, Engine starting and stopping system.
5	**Hydro-Electric Power plant :** Elements of hydro electric power plant, Classification of hydraulic turbines, Construction and working of Pelton wheel, Francis and Kaplan turbine, Draft tube, Cavitation, Governing of hydraulic turbines, Hydraulic electric power plants in India.
6	**Nuclear Power Plant :** Nuclear fusion and fission, Chain reaction, Nuclear fuels, Components of nuclear reactor, Classification of reactors, Pressurized water reactor, Boiling water reactor, Gas cooled reactor, CANDU reactor, Fast breeder reactor, Nuclear waste and its disposal, Nuclear power plants in India.

7	**Economics of power generation :** Load curves, load duration curves, Connected load, maximum load, Peak load, base load and peak load power plants, load factor, Plant capacity factor, Plant use factor, Demand factor, diversity factor, Cost of power plant, Performance and operating characteristics of power plant, Tariff for electric energy.

Term Work:

The term work shall be based on the topics mentioned above.

Practical / Oral:

The candidate shall be examined on the basis of term-work.

Reference Books:

1. Power Plant Engineering, P.K. Nag, Tata McGrahill Co., Delhi
2. Power Plant Engineering, Arora & Domkundwar, Dhanpat Rai & Co. Delhi.
3. Power Plant Engineering, R.K. Rajput, Laxmi Publication, Delhi
4. Power Plant Engineering, A.K. Raja, New Age International, Delhi
5. Power Plant Engineering, Dr. P.C. Sharma, S.K. Kataria & Sons, Delhi
6. Power Plant Engineering, C. Elanchazhian, I.K. International, Delhi
7. Power Plant Engineering, G.K. Pathak, Nirali Prakhashan. Mumbai.