S.R.I.S.T (LESSON PLAN)

NAME OF THE FACULTY: BISWAJIT CHAKRABORTY **TRADE: ME**
YEAR: 3rd SEM: 5th

SUBJECT: POWER ENGINEERING

PERIOD	TOPIC	REMARKS
14	**I.C. Engine and Pollution Control:** Basic Principle, representation on P-V & T-S diagrams and deduction of Thermal Efficiency of Otto Cycle, Diesel Cycle and Dual Combustion Cycle. (Simple numerical) Classification of I.C. Engines. Working Principle, Construction with function of components and Comparison of Two-Stroke and Four-Stroke (Petrol and Diesel) Engines. Hypothetical & Actual Indicator Diagram of Two-Stroke and Four-Stroke (Petrol and Diesel) Engines. Valve Timing Diagram of Two-Stroke and Four-Stroke (Petrol and Diesel) Engines. Brief Description of I.C. Engine Combustion (SI & CI), Firingorder of Multi-cylinder I.C. Engine, Scavenging, Preignition, Detonation, Supercharging, Turbo-charging, Simple Carburetor, M.P.F.I. and Fuel Injection Pump. Basic Concept of Governing of I.C Engine, Lubrication of I.C Engine and Cooling of I.C Engine. Performance of I. C Engine – Indicator Power, Brake Power, Morse Test, Mechanical Efficiency, Thermal Efficiency, Relative Efficiency (Efficiency Ratio), Volumetric Efficiency, Specific Fuel Consumption and Heat Balance Sheet. (Simple numerical) Pollutants in Exhaust Gases of Petrol and Diesel Engines, their effects on environment and possible ways of reducing the Pollutants in the Exhaust Gases.	

10	**Nozzles / Diffusers and Steam Turbines:** **Nozzles / Diffusers:** Working Principle, Classification and Application of Steam Nozzles & Diffusers. Continuity Equation, Sonic Velocity and concept of Mach Number. Steady Flow Energy Equation for flow through Steam Nozzles. (Simple numerical) Concept of Critical Pressure and Critical Pressure Ratio. **Steam Turbines:** Classification of Steam Turbines Working Principle, Construction with function of components of Simple Impulse Turbine and Simple Impulse-Reaction Turbine. Velocity Diagrams, Work done, Power and Efficiency of Simple Impulse Turbine. (Simple numerical by using Graphical Method only) Concept of Compounding of Steam Turbine. Concept of Governing of Steam Turbine.	
11	**Gas Turbine and Jet Propulsion:** **Gas Turbine:** Basic Principle, representation on P-V & T-S diagrams and deduction of Thermal Efficiency of Brayton or Joule Cycle. (No numerical) Classification and Applications of Gas Turbine. Comparison, labelled schematic flow diagram and function of components of Closed Cycle & Open Cycle Gas Turbines. Methods to improve thermal efficiency of gas turbine (Regeneration, Inter- Cooling, Reheating using T-S Diagram). (No analytical treatment) **Jet Propulsion:** Jet Propulsion – Basic Principles of Turbojet, Turbo Propeller & Ram Jet. Rocket Propulsion- Solid Propellants and Liquid Propellants and Components & Function of Liquid Propellants Rocket Engine.	
10	**Hydraulic Turbines:** Classification of Hydraulic Turbines. Construction and working principle of Pelton Wheel, Francis and Kaplan Turbine. Draft Tubes – working principle and types, Concept of Cavitation in Turbines Velocity Diagrams, Work done, Power and Efficiency of Pelton Wheel & Francis Turbine. (Simple numerical)	

	Basic concept of Governing of Turbine. Specific Speed and Selection of turbine on the basis of head and discharge available. Schematic Layout of Hydroelectric Power Plant.	