GOVERNMENT POLYTECHNIC JAJPUR

LESSON PLAN

SUBJECT- TH:1- INTRODUCTION TO ELECTRIC GENERATION SYSTEMS

SEMESTER-3RD

SESSION-WINTER 2026 (DT-01/07/2026)

Week	Class	Unit	Topic / Sub-topic	Period
Week 1	Class 1	Unit I	Course Introduction, Sources of Electrical Energy, Introduction to Thermal Power Plants	1
	Class 2	Unit I	Layout of a Typical Thermal Power Plant	1
	Class 3	Unit I	Working of Steam Turbine and Electric Generator	1
Week 2	Class 1	Unit I	Conventional Fuels: Coal – Properties and Applications	1
	Class 2	Unit I	Conventional Fuels: Gas and Diesel – Properties	1
	Class 3	Unit I	Nuclear Fuels – Nuclear Fission and Fusion	1
Week 3	Class 1	Unit I	Safe Practices in Coal-based Thermal Power Plants	1
	Class 2	Unit I	Safe Practices in Gas and Diesel Power Plants	1
	Class 3	Unit I	Safe Practices in Nuclear Power Plants	1
Week 4	Class 1	Unit I	Coal-fired Boilers: Fire Tube Boiler	1
	Class 2	Unit I	Coal-fired Boilers: Water Tube Boiler	1
	Class 3	Unit I	Gas/Diesel Based Combustion Engines	1
Week 5	Class 1	Unit I	Types of Nuclear Reactors	1

Week	Class	Unit	Topic / Sub-topic	Period
	Class 2	Unit I	Disposal of Nuclear Waste and Nuclear Shielding	1
	Class 3	Unit I	Unit-I Revision & Tutorial	1
Week 6	Class 1	Unit II	Energy Conversion Process in Hydropower Plants	1
	Class 2	Unit II	Classification of Hydropower Plants (High, Medium & Low Head)	1
	Class 3	Unit II	Pelton Turbine – Construction and Working	1
Week 7	Class 1	Unit II	Francis Turbine – Construction and Working	1
	Class 2	Unit II	Kaplan Turbine – Construction and Working	1
	Class 3	Unit II	Safe Practices in Hydropower Plants	1
Week 8	Class 1	Unit II	Locations of Major Hydropower Plants in India	1
	Class 2	Unit II	Unit-II Revision	1
	Class 3	Unit II	Numerical/Discussion	1
Week 9	Class 1	Unit III	Layout of Micro-Hydropower Plant	1
	Class 2	Unit III	Pelton Turbine for Micro-Hydropower Plants	1
	Class 3	Unit III	Francis Turbine for Micro-Hydropower Plants	1
Week 10	Class 1	Unit III	Kaplan Turbine for Micro-Hydropower Plants	1
	Class 2	Unit III	Locations of Micro-Hydropower Plants in India	1
	Class 3	Unit III	Unit-III Revision	1

Week	Class	Unit	Topic / Sub-topic	Period
Week 11	Class 1	Unit IV	Connected Load, Firm Power, Cold Reserve, Hot Reserve	1
	Class 2	Unit IV	Spinning Reserve, Base Load & Peak Load Plants	1
	Class 3	Unit IV	Load Curve, Load Duration Curve & Integrated Duration Curve	1
Week 12	Class 1	Unit IV	Cost of Generation	1
	Class 2	Unit IV	Average Demand, Maximum Demand & Demand Factor	1
	Class 3	Unit IV	Plant Capacity Factor, Plant Use Factor, Diversity Factor	1
Week 13	Class 1	Unit IV	Load Factor & Plant Load Factor	1
	Class 2	Unit IV	Choice of Size and Number of Generator Units	1
	Class 3	Unit IV	Combined Operation of Power Stations	1
Week 14	Class 1	Unit IV	Grid System: State Grid & National Grid	1
	Class 2	Unit IV	Brownout, Blackout, Causes and Impacts	1
	Class 3	Unit IV	National & International Blackout Case Studies	1
Week 15	Class 1	All Units	Complete Revision (Units I & II)	1
	Class 2	All Units	Complete Revision (Units III & IV)	1
	Class 3	All Units	Model Question Paper Discussion, Assignment & Doubt Clearing	1

Unit-wise Period Distribution

Unit	Topic	Syllabus Hours	Planned Periods
Unit I	Thermal Power Plants	16	16
Unit II	Large Hydropower Plants	9	9
Unit III	Micro-Hydropower Plants	8	8
Unit IV	Economics of Power Generation & Interconnected Power System	12	12
Total		**45 Hours**	**45 Periods**

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