

PLANNED THEORY SYLLABUS COVERAGE

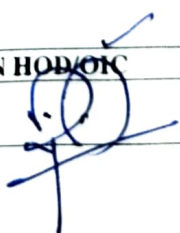
PTSC-7.

GPB		Department: Electrical Engg. Subject- IEGS (EEPC201)				
		Sem. & Branch -3 rd (EE)	Duration – 3 years			
SYLLABUS COVERAGE		Total Periods----- Theory -56 (T-42+DCS-14) Practical - 28				
Sr No	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remark
1	1-11	UNIT I-Thermal Power Plants: Coal, Gas/ Diesel and Nuclear-based	<p>Layout and working of a typical thermal power plant with steam turbines and electric generators. Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal, Gas/diesel, nuclear fuels–fusion and fission action.</p> <p>Safe Practices and working of various thermal power plants: coal-based, gas-based, diesel-based, and nuclear-based. Functions of the following types of thermal power plants and their major auxiliaries: Coal fired boilers, fire tube and water tube.</p> <p>Gas/diesel based combustion engines.</p> <p>Types of nuclear reactors: Disposal of nuclear waste and nuclear shielding. Thermal power plants in India.</p>	Power Plant Engineering g. P. K. Nag	Electrical Power Generation Deb Tanmoy	
2	12-20	Unit – II Large and Micro-Hydro Power Plants	<p>Energy conversion process of hydro power plant. Classification of hydro power plant: High, medium and low head. Construction and working of hydro turbines used in different types of hydro power plant:</p> <p>a. High head – Pelton turbine b. Medium head – Francis turbine c. Low head – Kaplan turbine.</p> <p>Safe Practices for hydro power plants. Different types of micro- hydro turbines for different heads: Pelton, Francis and Kaplan turbines, .. Locations of these different types of large and micro-hydro power plants in Himachal. Potential locations of micro-hydro power plants in Himachal</p>			

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3	21-32	Unit- III Solar and Biomass based Power Plants	<p>Solar Map of India: Global solar power radiation. Solar Power Technology</p> <p>a. Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors</p> <p>b. Solar Photovoltaic (PV) power plant: layout, construction, working.</p> <p>Biomass-based Power Plants</p> <p>c. Layout of a Bio-chemical based (e.g. biogas) power plant;</p> <p>d. Layout of a Thermo-chemical based (e.g. Municipal waste) power plant</p> <p>e. Layout of an Agro-chemical based (e.g. bio-diesel) power plant, Features of the solid, liquid and gas biomasses as fuel for biomass power plant.</p>			
4	33-44	Unit- IV Wind Power Plants	<p>Wind Map of India: Wind power density in watts per square meter</p> <p>Layout of Horizontal axis large wind power plant:</p> <p>Geared wind power plant. Direct-drive wind power plant.</p> <p>Salient Features of electric generators used in large wind power plants:</p> <p>Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG), Wound Rotor Induction Generator (WRIG)</p> <p>Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG), permanent magnet synchronous generator (PMSG)</p>			
5	45-56	Unit- V Economics of Power Generation and Interconne cted Power System	<p>Related terms: connected load, firm power, cold reserve, hot reserve, spinning reserve.</p> <p>Base load and peak load plants; Load curve, load duration curve, integrated duration curve</p> <p>Cost of generation: Average demand, maximum demand, demand factor, plant capacity factor, plant use factor, diversity factor, load factor and plant load factor.</p> <p>Choice of size and number of generator units, combined operation of power station.</p> <p>Causes, Impact and reasons of Grid system fault: State grid, national grid, brown-out and black-out; sample blackouts at national and international level.</p>			

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DATE 09/08/23	

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