DISCIPLINE ***ELECTRICAL***	SEMESTER ***6TH***	NAME OF THE TEACHING FACULTY Niranjan Nayak (Lect. in I & C)
SUBJECT ***RENEWABLE ENERGY SYSTEMS***	NO. OF DAYS/WEEK CLASS ALLOTTED - 60	SEMESTER FROM DATE 05.04.2021 to 30.06.2021 No. of week excluding holiday - 12
WEEK	CLASS DAY	THEORY TOPICS
1ST	01	Environmental consequences of fossil fuel use.
	02	Importance of renewable sources of energy.
	03	Sustainable Design and development.
	04	Types of RE sources.
2ND	05	Limitations of RE sources.
	06	Present Indian and international energy scenario of conventional and RE sources
	07	Solar photovoltaic system-Operating principle.
	08	Photovoltaic cell concepts Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).
3RD	09	Classification of energy Sources.
	10	Extra-terrestrial and terrestrial Radiation.
	11	Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.
	12	Solar collectors, Types and performance characteristics,
	13	Applications: Photovoltaic - battery charger, domestic lighting, street lighting
	14	Water pumping, solar cooker, Solar Pond.
	15	Introduction to Wind energy.
	16	Wind energy conversion.
5TH	17	Types of wind turbines
	18	Aerodynamics of wind rotors.
	19	Wind turbine control systems; conversion to electrical power:
	20	Induction and synchronous generators.
6TH	21	Grid connected and self excited induction generator operation.
	22	Constant voltage and constant frequency generation with power electronic control.
	23	Single and double output systems.
	24	Characteristics of wind power plant.
7TH	25	Energy from Biomass.
	26	Biomass as Renewable Energy Source
	27	Types of Biomass Fuels - Solid, Liquid and Gas.
	28	Combustion and fermentation.
8TH	29	Anaerobic digestion.
	30	Types of biogas digester.
	31	Wood gassifier.
	32	Pyrolysis.
9TH	33	Applications: Bio gas, Bio diesel
	34	Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.
	35	Ocean Thermal Energy Conversion (OTEC).
	36	Geothermal Energy – Classification.
10TH	37	Hybrid Energy Systems.
	38	Need for Hybrid Systems.
	39	Diesel-PV, Wind-PV, Microhydel-PV.
	40	Electric and hybrid electric vehicles.

	41	Revision, Previous year question & probable question discussion.
	42	
	43	
	44	
12^{TH}	45	Revision, Previous year question & probable question discussion.
	46	
	47	
	48	