Reg. No.



VI SEMESTER B.TECH (ELECTRICAL & ELECTRONICS ENGINEERING) END SEMESTER EXAMINATIONS, APRIL - MAY 2017

SUBJECT: RENEWABLE ENERGY [ELE 4024]

REVISED CREDIT SYSTEM

Time	: 3 Hours Date: 27, April 2017 Max. I	Marks: 50	
Instructions to Candidates:			
	 Answer ALL the questions. 		
	 Missing data may be suitably assumed. 		
1A.	What is Renewable energy? Mention its advantages & disadvantages	(03)	
1B.	Define the following:		
	 i. Solar constant ii. Declination angle iii. Hour angle iv. Latitude angle 	(04)	
	IV. Latitude angle	(04)	
1C.	Determine the local solar time and declination angle at a location latitude 23° 15' N, longit 77° 30' E at 14.30 IST on July 1 . Equation of time correction is given as - 0' 30"	ude (03)	
2A.	Calculate angle made by beam radiation with the normal to a flat plate collector, pointing south location in New Delhi (27 ^o 30' N, 76 ^o 42' E) at 10.00 hour solar time on October 29. Collector is tilted at an angle of 35 ^o with horizontal, also calculate day length.	the The (03)	
2B.	With a neat figure, explain the construction and working of Angstrom compensate pyrheliometer to measure the solar radiation.	tion (04)	
2C.	The following observation were made in Bhopal during the month of March: average lense of the day is 8.4 hours; longest day during the month is 9 hours: Angstrom's instruments Bhopal : $a=0.27$, $b=0.50$: solar radiation per day for a clear day is 2100 J/m ² . Day. Calcut the average daily global radiation.	igth for late (03)	
3A.	Describe the working of solar pond electric power plant with a neat flow diagram. Ment the applications of solar pond.	tion (03)	
3B.	Explain the construction and working of solar cooker. List out its advantages and limitation	ons. <i>(04)</i>	
3C.	With a neat block diagram, explain the power generation using solar photovoltaic system	(03)	
4A.	Describe the site selection consideration in wind energy system installation. List out advantages and disadvantages of WECs.	the (03)	
4B.	The following data related to a propeller turbine: Velocity of wind at 20° c= 20 m/s , Turbine diameter =12 m and operating speed of turbine = 45 rpm at maximum η . Calculate	the	
	i. Total power and power density in the wind stream ii. Maximum power and power density. iii. Reasonable power at η=35%. iv. Max torque and Max axial thrust.	(04)	

4C.	With a neat diagram, explain the construction and working of KVIC biogas plant. Mention its advantages and disadvantages.	(03)
5A.	Describe the working of up drought gasifier with a neat figure. List out the applications of gasifiers.	(03)
5B.	With a neat diagram, explain the working of closed type OTEC power plant.	(03)
5C.	Explain the double basin, linked basin section in the tidal power generation with a neat figure.	(04)