

VII SEMESTER B. TECH (ELECTRICAL & ELECTRONICS ENGINEERING) END SEMESTER ON-LINE PROCTORED EXAMINATIONS

DECEMBER 2021

RENEWABLE ENERGY [ELE 4306] (OPEN ELECTIVE – IV)

REVISED CREDIT SYSTEM

Time: 75	Minutes + 10 Minutes Date: 29 December 2021	Max. Ma	rks: 20
Instructions to Candidates:			
*	Answer ALL the questions.		
*	Missing data may be suitably assumed.		
*	Time: 75 minutes for writing + 10 minutes for uploading.		
1A.	Estimate the monthly average of the daily global radiation horizontal surface at Nagpur (21° 8' N, 79° 5' E) during the of October 15 of a non-leap year, if the average sunshine ho day is 7.3 hours. Assume a = 0.27 and b = 0.5.	n on a month our per	(04)
1B.	Explain the working principle of closed cycle Ocean thermal conversion with a neat diagram.	Energy	(03)
1C.	Find the angle subtended by beam radiation with the norm flat-plate collector at 9 a.m. for the day on November collector is in Delhi (28° 35' N, 77° 12' E), inclined at an at 36° with the horizontal and is facing due south.	al to a 3. The ngle of	(03)
2A.	A Darrius rotor has the following diameters $a=2.5m$ $b=2$ shown in Fig. Q. 2A. If it produces 3Kw of mechanical shaft at velocity of 10m/s, calculate the power coefficient an calculate the wind power.	2m. as power d also	

(03)

- **2B.** The wind power production company acquires a land 12X12 km land to install wind turbines of 50m blade length. Calculate the power production per land area when the wind power density at the hub is 350W/m², the coefficient of performance is 0.42 and the overall efficiency of turbine generator system is 93%. Assume the whole site the number of turbines are installed is 180 turbines, the array efficiency is 82%.
- **2C.** With neat Schematic Explain a single process conventional digester. What are the main features of continuous plant. **(03)**

(04)