Reg. No.



VII SEMESTER B.TECH (ELECTRICAL & ELECTRONICS ENGINEERING)

MAKEUP EXAMINATIONS, DECEMBER 2022

REVISED CREDIT SYSTEM

Time: 3	Hours	Date: 27 December 2022	Max. Marks: 50
Instructio	ons to Candidates:		
*	Answer ALL the question	ns.	
*	Missing data may be suit	tably assumed.	
1A.	Determine the loc on July 24 at De declination angle,	al apparent time corresponding to 12.30 elhi (28º35'N, 77º30' E), and also find if the equation of correction is – (1'.06	0 IST I the "). (03)
1B.	Explain the cor Pyranometer with	nstruction and working principle of a neat diagram.	of a (04)
1C.	Explain the follo latitude of location	wing: declination angle, Hour angle n w.r.t Solar radiation geometry.	and (03)
2A.	At Nagpur, the fol	llowing observations are made:	
	Theorical maximu	m possible sunshine hours = $9.5 h$	
	Average measure	d length of day during April = $9.0 h$	
	Solar radiation for	r clear day, H0= 2100 kJ/m²/day	
	Constants: a=0.2	7, b=0.50	
	Calculate the aver	rage daily global radiation.	(03)
2B.	Describe The par diagram, list out i	abolic concentrator collector with its ts advantages.	neat (03)
2C.	Describe the wor plant with its neat	king principle of solar pond electric p t diagram.	ower (04)
3A.	Derive an equation wind mill.	on for maximum power extraction from	n the (03)
3B.	Describe the func wind mill with its criteria for wind m	tion of different parts of the horizontal s neat diagram. List out the site sele nill installation.	axis ction (04)
3C.	Explain the factors plant.	affecting the Generation of biogas in the bi	iogas (03)

4A.	Compare & discuss the working principle of fixed dome & floating drum in the biogas generation with neat diagrams.	(04)
4B.	The following data are given for a family biogas digester suitable for the o/p of 8 cows; The retention time is 25 days , temp is 30° c , dry matter consumed per day is 2 kg, biogas yield is 0.24 m3 per kg. The efficiency of the burner is 65% , methane proportion is 0.7. Heat of combustion of methane is 28 MJ/m ^{3.}	(03)
4C.	Describe the Environmental problems from the Geothermal power plants, list out its advantages, disadvantages & applications.	(03)
5A.	Describe & compare the working principle of the open and closed cycle OTEC systems. List out the advantages & disadvantages of OTEC systems.	(03)
5B.	Compare Single basin single effect. & single basin double effect tidal power plants with neat diagrams.	(04)
5C.	The observed difference between the high and low water tide is 8.5 m for a proposed tidal site. The basin area is about 0.5 sq. km which can generate power for 3 hours in each cycle. The average available head is assumed to be 8 m, and the overall efficiency of the generation to be 70%. Calculate the power in H.P. at any instant and the yearly power output. Average specific weight of sea water is assumed to be 1025 kg/ m^3 .	