Code No: R1941023 **R19** **Set No. 1**

IV B.Tech I Semester Advance Supplementary Examinations, March – 2023

RENEWABLE ENERGY SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1 a) Compare the renewable energy sources and non renewable energy sources with respect to the load consumptions in present scenario? [7]

b) Draw the characteristics and explain the variation of declination angle of solar radiation? [8]

(OR)

2 a) State solar energy conservation systems and explain their applications? [7]

b) Determine the sun set hour angle and day length at a location latitude on 30^0N, on February 11? [8]

UNIT II

3 a) Derive and analyze the equivalent of the solar cell? [7]

b) Discuss in detail about the developing technologies of the solar voltaic systems? [8]

(OR)

4 a) Compare the effects of series resistance and shunt resistances of the solar cell? [7]

b) Explain in detail about the hill climbing technique of maximum power point tracking of solar systems? [8]

UNIT III

5 a) Write and explain the characteristics of wind and utilization aspects of wind energy systems? [7]

b) Draw the neat diagram and explain the horizontal axis wind machine? [8]

(OR)

6 a) Analyze the selection criterion of generator for the wind energy conversion systems? [7]

b) Derive and explain the efficiency expression of the wind energy conversion systems with relevant equations? [8]

UNIT IV

7	a)	Compare the small and micro hydro systems with respect to the efficiency and applications?	[7]
	b)	Derive and analyze the tidal power with relevant to the kinetic energy?	[8]
		(OR)	
8	a)	Analyze the process of measurement of head of the hydro system?	[7]
	b)	List out the wave power devices and explain with neat diagrams?	[8]

UNIT V

9	a)	Explain the process of Pyrolysis with necessary equations?	[7]
	b)	Elaborate the energy analysis of geothermal power generation systems?	[8]
		(OR)	
10	a)	Describe the direct combustion of heat in the bio mass energy conversion process?	[7]
	b)	Define the fuel cell efficiency and explain with necessary equations?	[8]