E Sem V C-Scheme R-19 ELEC – Winter 2025

Time: 3 Hours

Marks :80

21/11/25

Note: - 1. Question No. 1 is compulsory.
2. Attempt any three questions out of remaining five questions.
3. Assume suitable data if necessary & justify the same.
4. Figures to the right indicate marks.

Qu.1	Attempt **any Four**.	
(a)	Differentiate between conventional and non-conventional energy sources.	**[5]**
(b)	Draw the model of two junction solar cell. Also draw I-V and P-V characteristics of solar cell at STC. Specify the essential parameters on the characteristics.	**[5]**
(c)	Explains the working of wind energy system along with its various components.	**[5]**
(d)	Draw and discuss the static characteristics of fuel cell in brief.	**[5]**
(e)	Write a short note on solar pond.	**[5]**
(f)	Describe the working of Ocean energy conversation system.	**[5]**
Qu.2	Discuss the working of liquid flat plate collector with neat diagram. State its	**[10]**
(a)	advantages & limitations.	
(b)	Explain the working of proton exchange membrane (PEMFC) fuel cell with neat diagram.	**[10]**
Qu.3	Illustrate the significance of MPPT in Solar PV system with neat block diagram.	**[10]**
(a)	Explain perturb and observe MPPT algorithms with the help of suitable block diagram.	
(b)	Describe the construction and working of solar concentrating collectors with the help of neat diagram. List its advantages.	**[10]**
Qu.4	Describe the power converter topology used for double feed induction generators	**[10]**
(a)	(DFIG) in wind turbines.	
(b)	What is balance of system? Explain the important parameters related to battery. (1) Battery capacity (2) Depth of Discharge (3) C-rating (4) Deep Discharge batteries.	**[10]**
Qu.5	List the classification of PV System. Discuss the various types of stand-alone PV	**[10]**
(a)	system configurations in brief.	
(b)	Draw and explain the wind power characteristics. Show that ideal maximum rotor efficiency is 59.3% in wind energy system.	**[10]**
Qu.6	Analyze the impact of change in solar radiation and temperature on solar PV	**[10]**
(a)	characteristics with a neat diagram.	
(b)	Explain the working principle of Geothermal energy conversation system with neat diagram.	**[10]**

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