

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : **14EE2031**
Sub. Name : **Renewable Energy-I**

Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Briefly explain the mismatch losses of solar PV system.	C01	10
	b.	Discuss the photovoltaic effect on indirect band gap material. Mention the advantage of direct band gap semiconductor.	C01	10
(OR)				
2.	a.	Draw and discuss the effect of temperature and radiation on the output of solar cell.	C01	15
	b.	Mention the different electrical parameters mentioned in the datasheet of solar panel	C01	5
3.	a.	Make an inverter for a PV system with the output of 230V and 50 Hz and explain how the output can be controlled using sinusoidal pulse with modulation for less THD	C01	15
	b.	Draw the output characteristic of the solar cell to indicate the MPP.	C01	5
(OR)				
4.	a.	Track the maximum power point of SAPV system using P&O algorithm and mention the drawback of the same algorithm.	C02	15
	b.	Mention the role of charge controller in the SAPV system.	C02	5
5.	a.	Discuss the operation of full wave rectifier for the delay angle 90° with suitable waveforms.	C02	15
	b.	Discuss the need of energy storage devices in SAPV system.	C02	5
(OR)				
6.	a.	Track the MPP at rapidly varying environmental condition using incremental conductance algorithm and mention its limitation.	C02	15
	b.	Draw and explain the operation of SAPV system with MPPT.	C02	5
7.	a.	Design a complete SAPV system for supplying the peak load of 900W and 3500Whr.	C02	20
(OR)				
8.	a.	Draw and explain the operation of horizontal axis wind turbine .	C03	12
	b.	Derive the equation of output power generated from the kinetic energy of the wind turbine.	C03	8
<u>Compulsory:</u>				
9.	a.	Discuss about the C_p - λ curve of a wind turbine along with the different control methods used for better output.	C03	12
	b.	Draw and Explain the operation of grid connected wind energy system.	C02	8

ALL THE BEST