

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Fifth Semester

Electrical and Electronics Engineering

EE3014 - Power Electronics for Renewable Energy Systems

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	State the significance of renewable energy.	L2	1	2
2.	List the various types of devices available for capturing wave power.	L1	1	2
3.	Draw the slip-torque characteristics of Induction generators.	L2	2	2
4.	Mention few permanent magnet materials used in designing PMSGs.	L1	2	2
5.	State any two advantages of grid connected solar PV system.	L1	3	2
6.	What is inversion mode of operation of line commuted inverter?	L2	3	2
7.	State the issues in connecting the renewable energy systems to the grid.	L2	4	2
8.	Differentiate between fixed and variable speed wind energy conversion systems.	L2	4	2
9.	List different types of hybrid system.	L1	5	2
10.	Mention the merits of wind-diesel hybrid system.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16= 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a List the different types of fuel cells. Explain the working principle of fuel cell with neat sketches.	L2	1	16
	Or			
	b Discuss the influence of different renewable energy sources with special reference to the global warming and climate change context.	L2	1	16
12.	a Draw the schematic of double fed Induction Generator and explain its construction and principle of operation in detail.	L4	2	16
	Or			
	b Explain the steady state equivalent circuit model and performance characteristics of Squirrel Cage Induction Generator in detail.	L4	2	16
13.	a Enumerate the control strategy used in grid connected power converter system with neat sketch.	L4	3	16
	Or			
	b Analyze the principle of operation of buck-boost converter with time ratio and current limit control.	L4	3	16

14.	a	Investigate the working principle of AC-DC-AC converter for wind energy conversion with neat sketches.	L4	4	16
Or					
	b i	Examine the space vector PWM technique to control 3-phase inverter with neat schematic diagram.	L4	4	10
	ii	Draw and discuss the operation of Matrix converter.	L4	4	6
15.	a	Explain the operating principle of PV – Diesel hybrid system.	L4	5	16
Or					
	b	Examine the operating principle of PV Maximum Power Point Tracking in energy conversion.	L4	5	16