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PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025

Time: 1.00pm to 04.00pm

School: SOE	Program: B.Tech. (EEE)	
Course Code: EEE3024	Course Name: Solar Photovoltaic and Wind Energy Systems	
Semester: MK	Max Marks: 100	Weightage: 50%

CO - Levels	C01	C02	C03	C04	C05
Marks	24	24	26	26	-

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1	What are renewable and conventional energy sources?	2 Marks	L1	C01
2	How does the renewable energy usage impact the country's economy?	2 Marks	L1	C01
3	Define the terms: (i) Solar module, (ii) Pyranometer	2 Marks	L1	C02
4	Solar photovoltaic devices or solar cells change sunlight directly into electricity. Provide two main limitations of solar energy.	2 Marks	L1	C02
5	List out two main limitations of the selection of wind windmill site?	2 Marks	L1	C03
6	Mention the important components of the windmill?	2 Marks	L1	C03
7	What are the factors to be considered while choosing appropriate generators to get power output in a wind energy system?	2 Marks	L1	C03
8	Why is smart infrastructure necessary for an integrated energy system?	2 Marks	L1	C04
9	What is an integrated energy system?	2 Marks	L1	C04
10	Why does the cost-benefit analysis play a significant role in an integrated energy system?	2 Marks	L1	C04

Part B

Answer the Questions.

Total Marks 80M

11.	a	Outline the importance of conventional and renewable energy sources in modern society.	10Marks	L2	CO1
	b	Summarize the need for the energy transition in concerns of the environment and resource depletion.	10Marks	L2	CO1
Or					
12.	a	Illustrate the characteristics of infrastructure, economic impact, and resource availability using conventional energy sources.	10Marks	L2	CO1
	b	Illustrate the challenges faced during harnessing and using renewable energy sources.	10Marks	L2	CO1
Or					
13.	a	Compare and explain the series, parallel, and hybrid configurations of Solar Photovoltaic (SPV) systems to get the required power.	10Marks	L2	CO2
	b	Explain P-V and I-V curves while tracking the Maximum Power Point (MPP) when the load is connected to a solar photovoltaic system?	10Marks	L2	CO2
Or					
14.	a	A solar panel produces a current of 0.5 A and 12 V. When two rows of 10 solar panels are of same rating connected in series, calculate the total output current and voltage from the solar photovoltaic arrangement?	10Marks	L2	CO2
	b	Show how solar energy is harvested using solar collectors to obtain different forms of energy for local and commercial usage.	10Marks	L2	CO2
Or					
15.	a	With a neat diagram, explain the control scheme for a synchronous generator with a variable speed drive and utility interface.	10Marks	L2	CO3
	b	With a neat schematic diagram shows a double-output induction generator with a current source inverter for power delivery.	10Marks	L2	CO3
Or					
16.	a	Explain the site selection procedures involved during the wind plant commission.	10Marks	L3	CO3
	b	Explain the electrical schematic diagram of a grid-connected variable speed wind power system?	10Marks	L3	CO3

17.	a	Develop a smart infrastructure for a hybrid integrated system for delivering power to customers with economic and technical benefits?	10Marks	L3	C04
	b	With a neat diagram, construct a hybrid power system containing energy sources delivering power to customers in a parallel configuration.	10Marks	L3	C04
Or					
18.	a	With a neat diagram, construct a hybrid power system containing conventional and renewable energy sources delivering power to customers in a switched configuration.	10Marks	L3	C04
	b	Analyze the cost-benefit impact on the hybrid integrated energy system?	10Marks	L3	C04