Reg. No.															

Question Paper Code	13413

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Seventh Semester

Electrical and Electronics Engineering

20EEPC701 - DISTRIBUTED GENERATION AND MICRO GRID

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	The blades in the wind turbine work on the principle of (a) Pull (b) Lift (c) Drag (d) Lift and drag	1	K1	CO1
2.	What is the principle used in high speed propeller wind turbine (a) Bernoulli's (b) Newton's (c) Faradays (d) Lenz	1	K1	CO1
3.	As Solar Irradiance increase the photo generated current will (a) Decrease (b) Zero (c) Increase (d) Infinity	1	K1	CO2
4.	The main impact of series resistance in the solar cell (a) Increase short circuit current (b) Increase the open circuit voltage (c) Reduced the fill factor (d) Increase the fill factor	1	K1	CO2
5.	Power in waves is (a) directly proportional to the square of its amplitude and to the period of motion (b) inversely proportional to the square of its amplitude and to the period of motion (c)directly proportional to the square of its amplitude and Inversely proportional to the period of motion (d)inversely proportional to the square of its amplitude and directly proportional to the period of motion	1	K1	CO3
6.	Open cycle OTEC uses _____ surface water directly to make electricity. (a) hot (b) Warm (c) Cool (d) icy	1	K1	CO3
7.	In the context of electricity generation, what does CHP stand for? (a) Combined Heat and Power (b) Carbon Hydro Power (c) Concentrated Helium Production (d) Carbon Hydrogen Production	1	K1	CO4
8.	If the Depth of Discharge of a battery is x%, what is its SoC? (a) x % (b) (100-x) % (c) 100x % (d) (x-100) %	1	K1	CO4
9.	The microgrid systems are usually prepared to work in (a) Grid-connected (b) islanded (c) isolated operating mode (d) All of these	1	K1	CO5
10.	The objectives of the grid to have an optimal operation scheduling in microgrids to meet the (a) Economic aspects (b) Technical aspects (c) Environmental aspects (c)All of these	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	What are the classifications of wind turbines?	2	K1	CO1
12.	Define power coefficient.	2	K1	CO1
13.	List the control strategies in WPPs.	2	K1	CO1
14.	List out the functions of the charge controller in the PV System.	2	K1	CO2
15.	Differentiate between flat-plate and concentrating solar collectors.	2	K2	CO2
16.	Define Solar Ponds and list the merits and demerits of solar ponds.	2	K1	CO2
17.	List different types of hybrid systems.	2	K1	CO3
18.	List some of the organic materials used in bio-mass plant.	2	K1	CO3

19.	Classify the Distributed Generation based on the capacity.		*2*	*K1*	*CO4*
20.	What is the importance of IEEE1547 standards?		*2*	*K1*	*CO4*
21.	Differentiate central power plant and microgrid.		*2*	*K2*	*CO5*
22.	What is micro grid? List its characteristics.		*2*	*K1*	*CO5*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain the various components of WPPs in detail.	*11*	*K2*	*CO1*
		OR			
	b)	Discuss the various factors to be considered while selecting WPPs.	*11*	*K2*	*CO1*
24.	a)	Explain briefly about the solar thermal power plant. Also discuss its advantages, disadvantages and applications.	*11*	*K2*	*CO2*
		OR			
	b)	List the different types of MPPT algorithm. Explain the incremental conductance MPPT algorithm with flow chart.	*11*	*K2*	*CO2*
25.	a)	Explain briefly the working principle of fuel cell.	*11*	*K2*	*CO3*
		OR			
	b)	Explain the concept of Biomass Energy System with its advantages, disadvantages and Applications.	*11*	*K2*	*CO3*
26.	a)	Explain briefly about the concept of distributed generation and its importance and compare with the conventional power grid.	*11*	*K2*	*CO4*
		OR			
	b)	Discuss the impact of grid integration with NCE sources on existing power system.	*11*	*K2*	*CO4*
27.	a)	Outline the typical structure and configuration of micro grid with a neat diagram.	*11*	*K2*	*CO5*
		OR			
	b)	Interpret the different topologies of the power electronic interface in DC microgrid.	*11*	*K2*	*CO5*
28.	a) (i)	Summarize in detail the benefits of integrating DG units based on economical and technical aspects.	*6*	*K2*	*CO4*
	(ii)	Compare and contrast the AC and DC microgrid.	*5*	*K2*	*CO5*
		OR			
	b) (i)	Outline in detail about the concept of Ultra capacitor used for Energy Storage system.	*6*	*K2*	*CO4*
	(ii)	Explain in detail the recent technology adopted in microgrids.	*5*	*K2*	*CO5*