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Code No. : 18322

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD*Accredited by NAAC with A++ Grade***B.E. (E.E.E.) VIII-Semester Main & Backlog Examinations, June-2022****Smart Grid Technologies (PE-VI)**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B***Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Define Smart Grid.	2	1	1	1,2,3,12
2.	List out two differences between conventional grid and smart grid.	2	1	1	1,2,3,12
3.	Explain the objectives of Energy Management System?	2	3	2	1,2,3,12
4.	Compare the difference between SCADA and PMU?	2	2	2	1,2,3,12
5.	Explain the need of Renewable integration?	2	3	3	1,2,3,12
6.	List out any four different energy storage technologies?	2	1	3	1,2,3,12
7.	Draw the hierarchy of Phasor Measurement System?	2	1	4	1,2,3,12
8.	Explain the importance of communication technology in Smart Grid.	2	2	4	1,2,3,12
9.	Explain the need of Area Control Error in LFC	2	3	5	1,2,3,12
10.	Explain the important steps in Jaya Algorithm?	2	2	5	1,2,3,12
Part-B (5 × 8 = 40 Marks)					
11. a)	Explain the advantages/benefits of Smart Grid for Customer, Utility System?	3	2	1	1,2,3,12
b)	Demonstrate the new technologies required for Smart Grid. Explain the driving forces and features of smart grid?	5	2	1	1,2,3,12
12. a)	Organize the architecture of IEEE Smart Grid model with neat Diagram.	4	1	2	1,2,3,12
b)	Categorize the applications of SCADA in Generation, Transmission and Distribution Automation?	4	2	2	1,2,3,12
13. a)	Analyze the concept of Electric vehicles and Plug in Hybrid Electric Vehicles. Explain the importance of EVs?	6	2	3	1,2,3,12
b)	Define Microgrid and draw its schematic? Explain the mode of operation of Microgrid?	2	3	3	1,2,3,12

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14. a)	Explain about Wide Area Measurement Systems?	3	2	4	1,2,3,12
b)	Classify the communication technologies adopted in Synchro-Phasor communication. Explain any three communication technologies adopted.	5	2	4	1,2,3,12
15. a)	Illustrate different methods for Reactive power control in Microgrid and explain the same with any one optimization method in brief.	4	4	5	1,2,3,12
b)	Organize the common steps involved in Evolutionary Algorithms. Explain the step-by-step implementation of Genetic Algorithm?	4	1	5	1,2,3,12
16. a)	Examine the key challenges of smart grid.	4	3	1	1,2,3,12
b)	Explain any three domain in Smart Grid Conceptual model?	4	3	2	1,2,3,12
17.	Answer any <i>two</i> of the following:				
a)	Explain about climate change, environmental impact and Economic issues due to electric vehicles.	4	3	3	1,2,3,12
b)	Distinguish advantages of PMU. Explain about 1-cycle DFT method to estimate magnitude and phase angle of a signal.	4	4	4	1,2,3,12
c)	Explain the advantages of Voltage Control in Micro-Grid. Explain the voltage control using any optimization technique?	4	4	5	1,2,3,12

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%
