BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH   SEMESTER : VII
BRANCH: EEE   SESSION : MO/2024

SUBJECT: EE605R1 MICROGRID OPERATION AND CONTROL

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	What are the control and protection requirements in a microgrid system? What are the economic advantages of microgrid?	[5]		1,2
Q.1(b)	Draw the generalized layout of microgrid and explain its architecture	[5]		1.2
Q.2(a)	What is MPPT? Discuss the implementation of Boost converter for realizing MPPT using load line concept. Use proper circuit diagrams and related equations.	[5]		2
Q.2(b)	Discuss the complete modelling of Entire PV energy conversion system with the help of average modelling and governing equations.	[5]		2,3
Q.3(a)	Discuss the hierarchical control structure in a microgrid using block diagram and explain its functions.	[5]		1,2
Q.3(b)	Discuss Droop control method in inverter based DG connected system when the grid is inductive, resistive and general case.	[5]		3
Q.4(a)	Why there is low inertia in a microgrid system? What are its negative impacts?	[2]		2
Q.4(b)	What are the various issues that pertains if islanding remains undetected?	[3]		1.2
Q.4(c)	Explain the modelling and working of VSG.	[5]		3
Q.5(a)	What is Non detection zone in Islanding detection? Explain with graph.	[2]		1.2
Q.5(b)	Discuss any three passive islanding detection techniques in brief.	[3]		3
Q.5(c)	What is the purpose of Emergency control in a microgrid? Discuss any two load shedding algorithms with the help of flowchart.	[5]		2.3

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