

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION)**

**CLASS: B.TECH.  
BRANCH: EEE**

**SEMESTER: VII  
SESSION: MO/2022**

**SUBJECT: EE605 MICROGRID OPERATION AND CONTROL**

**TIME: 2 HOURS**

**FULL MARKS: 25**

**INSTRUCTIONS:**

1. The total marks of the questions are 25.
  2. Candidates must attempt for all 25 marks.
  3. Before attempting the question paper, be sure that you have got the correct question paper.
  4. The missing data, if any, may be assumed suitably.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q1 (a)	What is the role of energy manager and microgrid central controller in microgrid operation?	[2] A	2
Q1 (b)	Enumerate different technologies for distributed generation and mention their typical available size range.	[3] A	1
Q2 (a)	What is point of common coupling (PCC) in a microgrid?	[2] B	2
Q2 (b)	Draw the microgrid layout as proposed by CERTS and explain its working.	[3] A	1
Q3 (a)	Mention different technical challenges while operating a microgrid in isolated mode of operation.	[2] A	2
Q3 (b)	Draw the line diagram for AC, DC and AC/DC hybrid microgrid and enumerate their characteristics in brief.	[3] A	2
Q4 (a)	What are the power quality standards in terms of voltage harmonics mentioned by IEEE 1547-2018 standard?	[2] B	1
Q4 (b)	Draw the table showing reactive power injection and absorption capabilities for DERs as set by IEEE 1547-2018 standard.	[3] B	1
Q5	Consider an interconnected 50-Hz power system that contains four turbine-generator units rated 750 MW, 500 MW, 220 MW and 110 MW. The regulating constant of each unit is 0.05 per unit based on its own rating. Each unit is operating on 75% of its own rating when the load is suddenly dropped by 250 MW. Choose a common base of 500 MW and calculate the overall rise in frequency and drop in the mechanical power output of each unit.	[5] B	4

::: 26/09/2022 :::M