Roll No. ....

OLE-24228

B. Tech. 5th Semester (EE)

Examination – April, 2021

POWER SYSTEMS - I

Paper : EE-315-F

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all. Question No. **1** is *compulsory*. Attempt *four* questions from the Section A, B, C & D by selecting at least *one* question from each section.

1. (a) Draw the single phase representation of balanced three phase network and explain it.   5

   (b) What is the importance of load flow analysis in power system ?   5

   (c) What do you mean by outages ?   5

   (d) What do you mean by decentralised control ?   5

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SECTION – A

2. What is the difference between one line impedance diagram and reactance diagram ? Explain with a suitable example.   20

3. (a) Express the per unit admittance of a power system in terms of base voltage and base voltampere.   10

   (b) Derive the expression for complex power in a single phase load.   10

SECTION – B

4. Detail the algorithm to perform load flow using Gauss Siedel method and also draw its flow chart.   20

5. The load flow data for the sample power system are given below. The voltage magnitude at bus 2 is to be maintained at 1.04 p.u. the max and min reactive power limits of the generator at bus 2 are 0.35 and 0.0 p.u. respectively. Determine the set of load flow equation at the end of first iteration by using N-R method :   20

Bus code	Impedance	Line charging admittance
1-2	0.08 +j0.24	0
1-3	0.02+j0.06	0
2-3	0.06+j0.18	0

Schedule of generation of loads :

Bus	Assumed	Generation	Load

Code	voltage				
		MW	MVAR	MW	MVAR
1	1.06+j0.0	0	0	0	0
2	1.00 +j0.0	0.2	0	0	0
3.	1.00+j0.0	0	0	0.6	0.25

SECTION – C

6. Explain Optimal scheduling of hydrothermal system in details. **20**

7. Explain Optimal operation of generators on a bus bar in details. **20**

SECTION – D

8. How is two area frequency control achived ? Draw the block diaram to achive it. **20**

9. Explain Load frequency control and economic dispatch control in details. **20**

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