



M 25354

Reg. No. :

Name :

VI Semester B.Tech. Degree (Regular/Supplementary/Improvement – Including Part Time) Examination, May 2014

(2007 Admn. Onwards)

PT 2K6/2K6 EE 603 : Power Systems – II

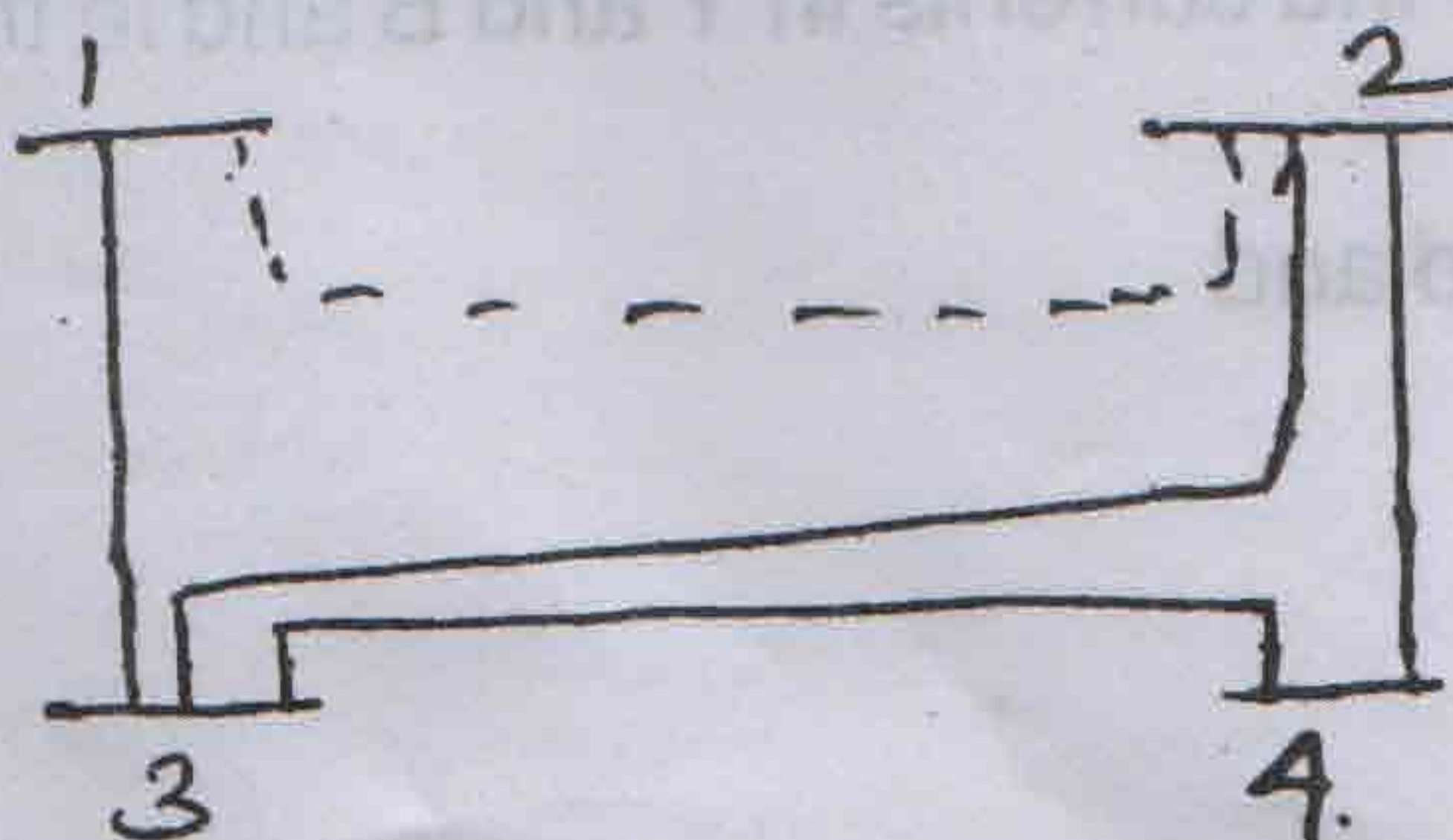
Time: 3 Hours

Max. Marks : 100

Instruction : Answer all questions.

1. a) Choosing a simple power system explain the procedure for drawing the one-line diagram.
b) Illustrate the Y bus formation by direct inspection.
c) Draw the sequence networks of a Y – Y transformer.
d) Explain the connection of sequence networks for a double line-to-ground fault.
e) Explain the model of a turbine speed governing system.
f) What are B coefficients ? Explain.
g) Obtain the swing equation for a two machine system.
h) What are the factors affecting the stability of a power system ? Explain. (8×5=40)
2. a) Following figure shows a bus system. The line impedances in per. are given below :

	R p.u	X p.u
1 – 2	0.05	0.15
1 – 3	0.10	0.30
2 – 3	0.15	0.45
2 – 4	0.10	0.30
3 – 4	0.05	0.15





Find the Y Bus when :

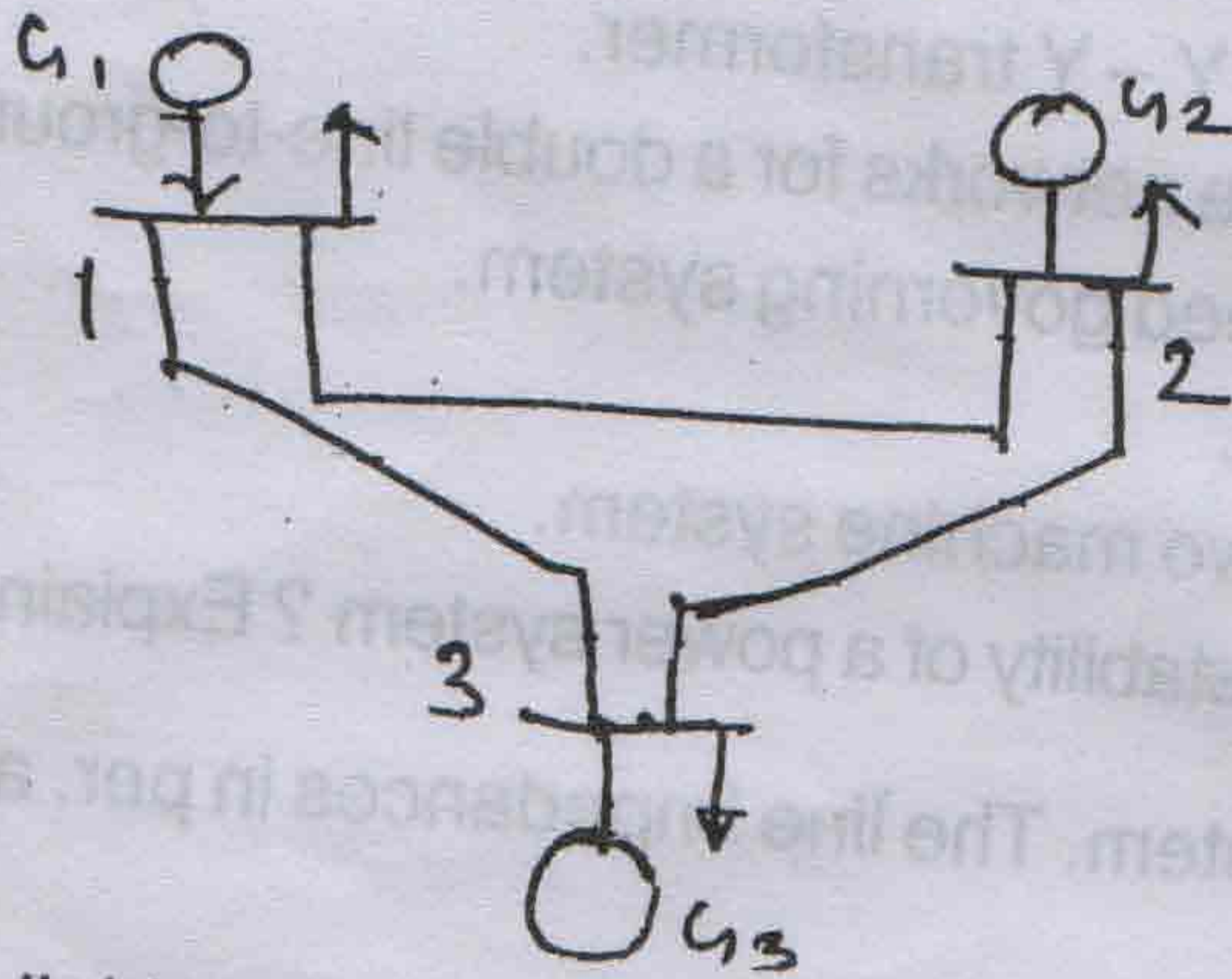
- i) line 1 to 2 is not connected and
 - ii) line 1 to 2 is connected.
- b) Explain Gauss siedel method of load flow analysis.

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OR

c) For the 3 bus system shown below, each line has a series impedance of $0.02 + j 0.8$ p.u and shunt admittance of $j0.02$ p.u. The details of specified quantities are given below :

Bus	PD	QD	PG	QG	Voltage
1	2	1	not specified	not specified	$1.04 + j0$
2	0	0	0.5	1.0	unspecified
3	1.5	0.6	0	?	$ v_3 = 1.04$



Controllable restive power source is available at bus 3 with constraint $0 \leq Qu_3 \leq 1.5$ p.u. Find load flow solution using NR method. Perform 3 iterations.

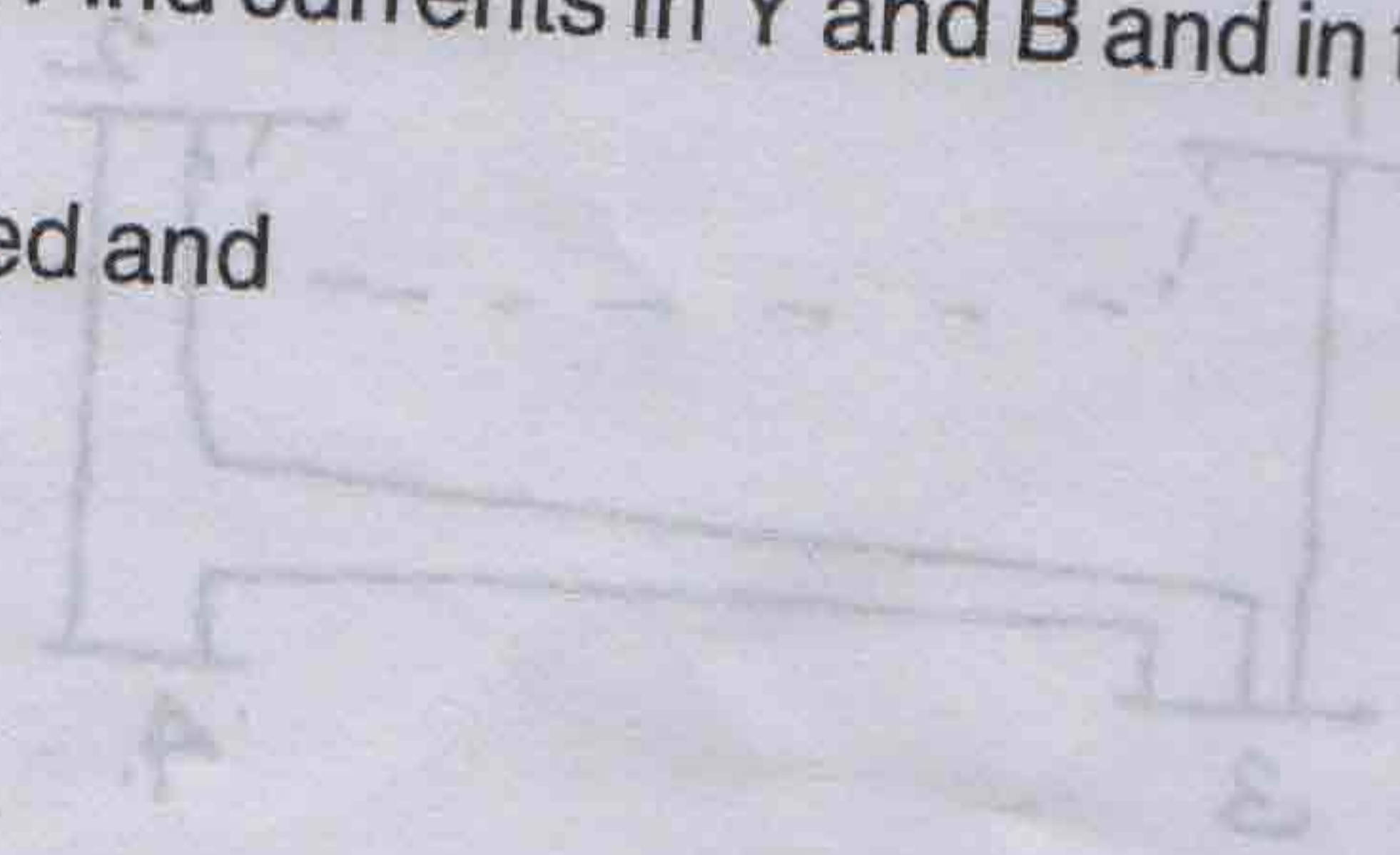
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3. a) A 3 phase synchronous generator has positive, negative and zero sequence reactances of 1.0, 0.8, 0.4 Ω per phase respectively. The phase sequence is RYB. The no load voltage is 11KV between lines. A short circuit occurs between Y and B and earth at generator terminals. Find currents in Y and B and in the earth. Return circuit :

- a) if the generator neutral is solidly earthed and
- b) if it is isolated.

Use R phase as reference.

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- b) Discuss about fault analysis using Z bus. 7
- OR
- c) Explain short circuit MVA and current limiting reactors. 8
- d) Describe Z bus building algorithm. 7
4. a) Discuss about optimal load flow solution with out constraints. 9
- b) Explain two area load frequency control. 6
- OR
- c) Write short notes on **any two** of the following :
- i) Automatic load dispatching
 - ii) Automatic voltage regulation
 - iii) Load frequency control. 15
5. a) Discuss about power system voltage stability and methods of improving voltage stability. 9
- b) Explain the effect of cleaning time on stability. 6
- OR
- c) Describe equal area criterion and its applications (any two). 15
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