Total No. of Printed Pages:2

SUBJECT CODE NO:- P-8051
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Electrical Power System) Examination May/June 2017
Computer Aided Power System Analysis
(Revised)

[Time : Three Hours] **[Max Marks :80]**

Please check whether you have got the right question paper.

N.B
i) Solve any two questions from each section.
ii) Assume suitable data if required

Section A

Q.1 a) The one line diagram of a power system shown in Fig.1. the three phase power and line voltage ranges are given below 10

Transformer :100MVA 23/115kv x=20%

Line: Z=j65Ω.

Load bus2 (S_2)=150mw+j5MVAr.

Load bus3 (S_3)= OMW+j20 MVAr.

It is required to maintain the voltage at bus 3 at 115<0^o Kv. Detrmine the voltage at buses 1&2

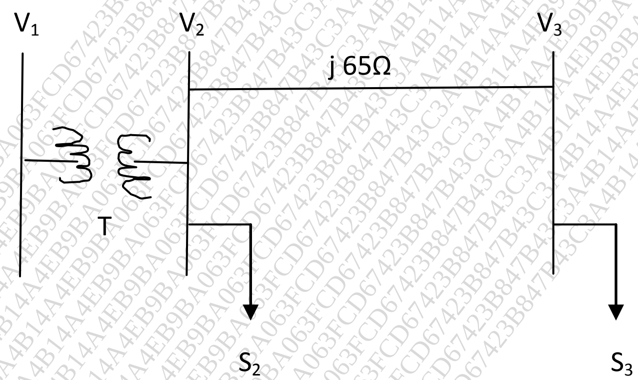

fig.1 Q 1(a)

b) Derive the symmetrical component for η phase system 10

Q.2 a) Analyze the single line open fault 10

b) Determine the sequence network for double line to ground fault on a three phase generator with fault on phases b & c through an impedance Z_f to ground. Assuming the generator is initially on no load. 10

Q.3 a) Derive the sequence impedance of three winding transformer. 10

b) The reactance data for a power system shown in fig.2 in PU on a common base is as follows. 10

Item	X^1	X^2	X^0
G_1	0.1	0.1	0.05
G_2	0.1	0.1	0.05
T_1	0.25	0.25	0.25
T_2	0.25	0.25	0.25
Line 1-2	0.3	0.3	0.5

Compute the fault current in PU for a single file to ground fault at bus 1

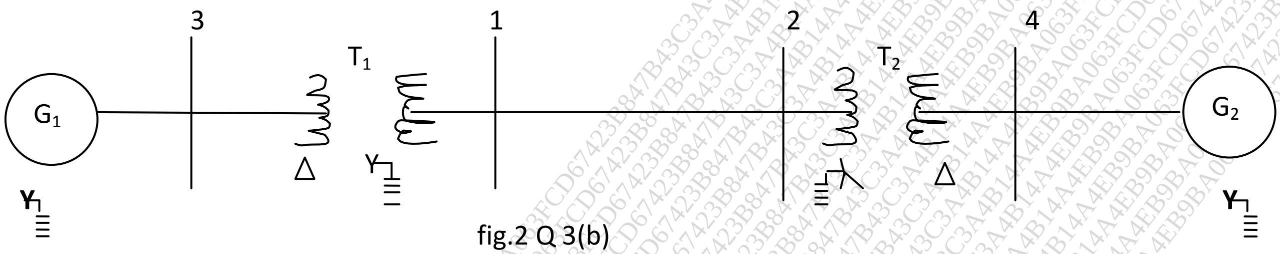

fig.2 Q 3(b)

Section B

Q.4 a) What do you understood by change of symmetry? Explain its importance in analyzing unbalanced faults. 10

b) What is kron's transformation matrix? Explain the use of this matrix to analyze SLG fault. 10

Q.5 a) What is simultaneous fault? How to analyze simultaneous fault using two part network theory? 10

b) A simple power system is shown in fig with simultaneous faults indicated by X's at faults points F and F'. the following system data is known: 10

Generator(A): $Z_1'' = Z_2 = j\,0.12$, $Z_0 = j0.1$, $E_A = 1.1 << 30^o$

Generator(B): $Z_1'' = Z_2 = j\,0.15$, $Z_0 = j0.13$, $E_B = 1 < 0^o$

Transformer (T_1) $Z_1 = Z_2 = Z_0 = j0.10$

Transformer (T_2) $Z_1 = Z_2 = Z_0 = j0.12$

Transmission line $Z_1 = Z_2 = j0.5$, $Z_0 = j1.0$

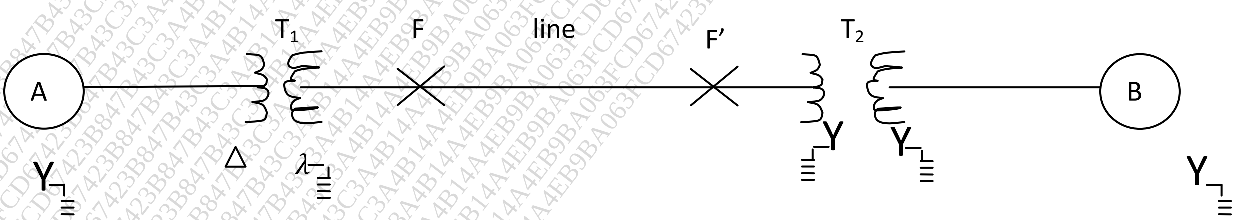

Fig.3 Q.5(b)

Q.6 Write short notes. (10x2) 20

i) Decoupled power flow method.

ii) Comparison of admittance and impedance matrix techniques.

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