

SUBJECT CODE- 8212
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E.(Electrical Power System) Examination Nov/Dec 2015
Computer Aided Power System (CAPS)
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

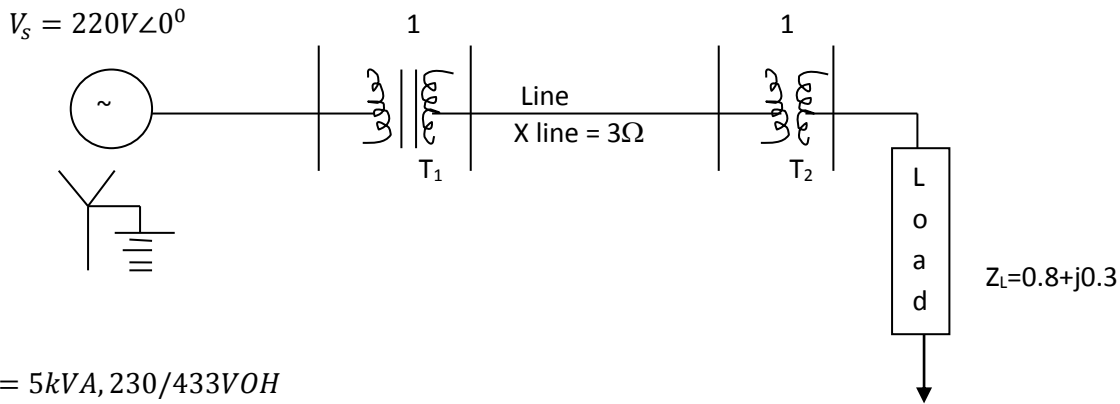
“Please check whether you have got the right question paper.”

N.B i) Solve any two questions from each section.

ii) Assume suitable data, if required.

Section A

- Q.1 a) Define PU system? What are the advantages of using PU system for power system analysis? 10
 b) Fig.1 shows single line diagram of a single phase circuit. Using base values of 5kva and 230V, draw the PU circuit diagram, and determine PU impedances & PU source voltage. 10



$T_1 = 5kVA, 230/433VOH$
 $X_{eq} = 0.1PU$
 $T_2 = 2KVA, 440/120 volt x_{eq} = 0.1PU$

Fig.1 &.1b.

- Q.2 a) Explain with neat flow chart Zbus building algorithm 10
 b) Two synchronous machines are connected through three phase transformer & transmission line as shown in fig.2. 10
 the ratings of the machine & transforms are:
 $M_1 \& M_2: 200mVA, 20kV, x_d'' = x_1 = x_2 = 10\% \ x_0 = x_n = 5\%$
 $T_1 \& T_2: 100mVA, 20\Delta/440Y \ kV \ x = 10\%$
 Select a base of 200mVA, 440kv in transmission line circuit the line reactances are $x_1 = x_2 = 15\% \ \& \ x_0 = 25\%$
 Draw sequence networks.

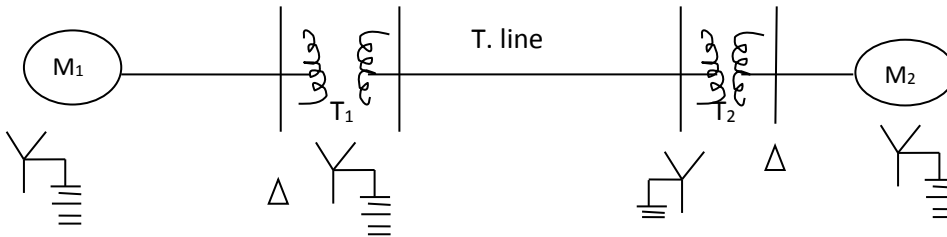


Fig.2 Q.2.b

- Q.3 a) Derive the expression of sequence components for one conductor open fault. Draw the connection diagram for sequence network for the same. 10
 b) Derive the expression for fault current for LL fault on phase a & b. 10

Section-B

- Q.4 a) Derive the expression for sequence impedances of transmission line 10
b) Write short note on sequence impedances of three winding transformer. 10
- Q.5 a) Discuss the generalized fault diagram for shunt faults. 10
b) Represent the simultaneous 2LG and one line open fault using two PA network 10
- Q.6 Write short notes (any two) 20
i) Computational procedure for load flow solution using Gauss seidel method.
ii) Kron's transformation matrix
iii) Analytical simplification of series faults.