Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1442
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech. (Electrical) (Sem-VI)
Power System Analysis
[REV]

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

Please check whether you have got the right question paper.

N.B.:
- Question no 1 from section A and Question no 6 from section B is compulsory.
- Solve any two from remaining questions from each section.
- Assume suitable data, if required.

Section – A

Q.1 Attempt any five of the following: 10

a. Short note on per unit system.

b. Explain in brief one-line diagram and impedance diagram.

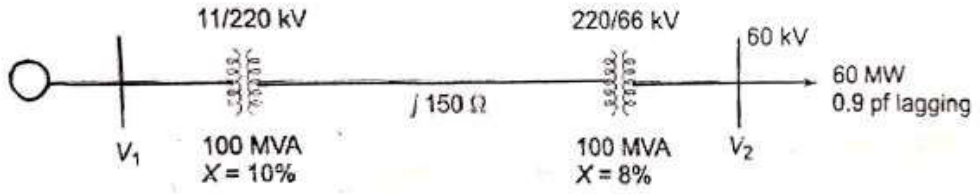
c. Explain in brief transient on transmission line.

d. Short note Z-bus formulation.

e. What is different between symmetrical and unsymmetrical fault.

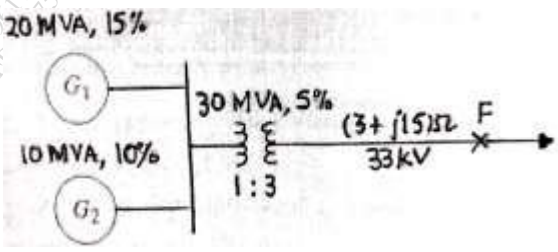
f. Express the per unit impedance Z_{pu} and per unit admittance Y_{pu} of system in term of the base voltage V_{base} and the base volt-amperes $(VA)_{base}$

Q.2 a) Figure shows the schematic diagram of a radial transmission system. The rating and reactance of the various components are shown therein. A load of 60 MW at 0.9 power factor lagging is tapped from the 66 kV substations which is to be maintained at 60 kV. Calculate the terminal voltage of the synchronous machine. Represent the transmission line and the transformer by series only. 08



b) Explain in detail representation of transformer. 07

Q.3 a) Three phase short circuit fault occurs at point F in the system shown in figure. Calculate the fault current. 08

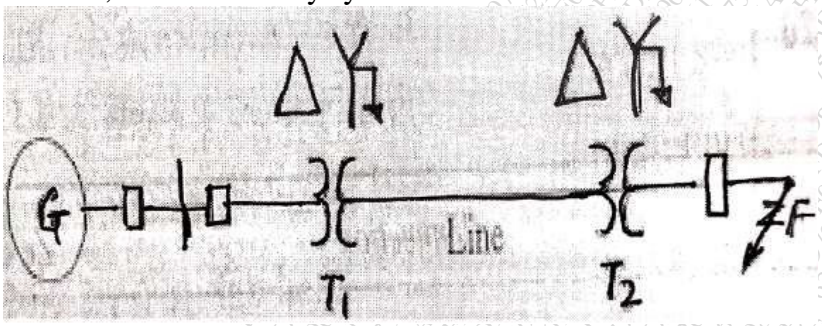


b) Explain short circuit on loaded synchronous machine. 07

Q.4 a) Explain characteristic of modern power system and physical structure. 08

b) Explain selection check list for circuit breaker. 07

Q.5 a) Rating: 2 MVA, 6.6 kV, X_1=10% X_2=7% X_0=3%, T_1, T_2:6.6/11 kV, 2MVA, X=5% $X_{1line}=X_{2line}$=j0.5 Ω. X_{0line}=1.5 Ω.Fault occurs at point F as shown figure draw sequence networks; assume initially system is on no load. 08



b) Explain sequence impedance synchronous machine. 07

Section B

Q.6 Attempt any five of the following: 10

a. What is different between Xbus and Zbus.
b. Short note on how are buses classified.
c. Define load flow.
d. Give reasons NR method is based on Taylor series.
e. Which fault is more severe if it occurs at generator terminal and why.
f. Explain in brief interconnected power system.

Q.7 a) Derive the necessary equation to determine double line to ground fault. 08

b) Discuss the bus impedance matrix for analysis of unsymmetrical shunt fault. 07

Q.8 a) Discuss the load flow problem. 08

b) Give the comparison of load flow methods. 07

Q.9 a) Explain in detail load dispatch center function. 08

b) Explain emergency and restorative control. 07

Q.10 a) Derive an expression for fast decoupled load flow method. 08

b) Discuss the contingency analysis. 07