National Institute of Technology Delhi
Mid- Semester Examination, March 2019

B. Tech (EEE)

Sub: Power Systems (Code:EEL253)

Time: 2 Hours **Max. Marks :25**

Instruction: All questions are compulsory. Symbols used in the questions are having their usual meaning. Assume if any data is missing.

Q.1 The single line diagram of an unloaded power system is shown in Fig 1.The generator transformer ratings are as follows: **(7)**

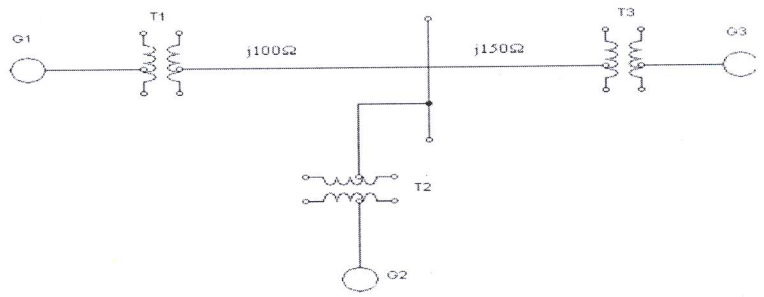

Fig 1

G_1=20 MVA, 11 kV, X''=25%
G_2=30 MVA, 18 kV, X''=25%
G_3=30 MVA, 20 kV, X''=21%
T_1=25 MVA, 220/13.8 kV (Δ/Y), X=15%
T_2=3 single phase units each rated 10 MVA, 127/18 kV(Y/Δ), X=15%
T_3=15 MVA, 220/20 kV(Y/Δ), X=15%
Draw the reactance diagram using a base of 50 MVA and 11 kV on the generator1.

Q.2 Explain the different types of Sub-station. **(4)**

Q.3 List the advantages of dc transmission over AC transmission? **(4)**

Q.4 Describe the line compensation in details. **(5)**

Q.5 A 3-phase 765kV, 60Hz, 300km, completely transposed line has the following positive sequence impedance and admittance z = 0.0165+j0.3306 Ω/km and y= j4.674×10-6 S/km. Calculate ABCD parameters in a nominal Π circuit. **(5)**

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