Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech

Branch : EEE **Semester** : 5

Title of the Course : Power System Analysis **Course Code** : EEL 302

Time: 2hr **Maximum Marks: 25**

Note: ***Attempt all questions.***

Mark

Q. [1] How the base values are chose in per unit representation of a power system? 2

Q. [2] Why one of the buses taken as slack bus in a power system? 2

Q. [3] If the reactance in ohms is 15 ohms, find the p. u. value for a base of 15 KVA and 10 KV. 2

Q. [4] What are the different types of buses in power systems? What are the quantities specified at each bus? 3

Q. [5] Consider the impedance diagram of Fig. A in which the system parameters are given in per unit by $Z_{11} = Z_{22} = j0.25$, $Z_{12} = j0.2$, $Z_{13} = j0.25$, $Z_{23} = Z_{34} = j0.4$ and $Z_{24} = j0.5$. Evaluate the Y-bus matrix form give line specification. 6

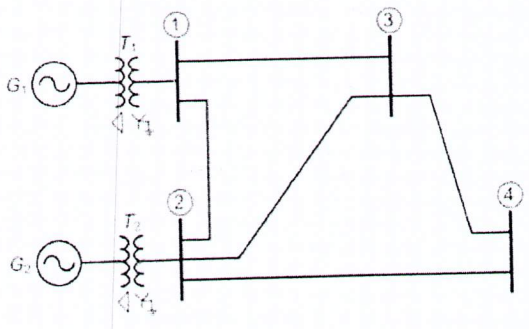

Fig. A

Q. [6] A single-phase two winding transformer is rated 20 kVA, 480/120 volts, 50 Hz. The equivalent leakage impedance of the transformer referred to the 120 volt winding, denoted winding 2, is $Z_{eq2} = 0.0525\angle 78.13^0\,\Omega$. Using the transformer ratings as base values, determine the per-unit leakage impedance referred to winding 2 and referred to winding 1. 10