Library 9/3/18 (Evening)

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech

Branch	**: EEE**	**Semester**	**: 4**
Title of the Course	**: Power Systems**	**Course Code**	**: EEL 253**

Time: 02 Hrs **Maximum Marks: 25**

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

Q. [1] What is single line diagram? 2

Q. [2] How are the loads represented in reactance or impedance diagram? 2

Q. [3] A single-phase voltage source with $V = 100\angle 130^0$ volts delivers a current $I = 10\angle 10^0$ A. Calculate the source real and reactive power and state whether the source delivers or absorbs each of these. 4

Q. [4] Two loads connected in parallel are supplied from a single-phase 240-V rms source. The two loads draw a total real power of 400 kW at a power factor of 0.8 lagging. One of the loads draws 120 kW at a power factor of 0.96 leading. Find the complex power of the other load. 4

Q. [5] Prove that star connected circuit impedance is equivalent to one third of delta connected circuit impedance i.e. $Z_Y = \frac{Z_\Delta}{3}$. 4

Q. [6] Evaluate the transmission line A, B, C, D parameter for nominal $\prod$ (pi) method. 4

Q. [7] A 3-phase, 50 Hz overhead transmission line 100 km long with 132 kV as line voltage at the receiving end. The line has following constants: (i) Resistance = 0.17 ohm/km/phase, (ii) Inductance = 1.1 mH per km/phase, (iii) Capacitance = 0.0082 micro-farad per km/phase. Using nominal T-method find voltage, current, power factor of the sending end when 70 MW at 0.8 p.f. lagging load is connected at receiving end. 5