Ref.: PG/EE/T/127C/2018

M.E. ELE. ENGG. 1st YEAR 2ND SEMESTER EXAMINATION 2018

POWER SYSTEM ANALYSIS

Time: Three hours | Full Marks: 100

Answer **any five** questions.
Figures in the margin indicate full marks

1.(a)	State and justify the assumptions made in the formulation of the Fast Decoupled load flow.	(10)
(b)	Explain the solution algorithm of the Fast Decoupled load flow.	(10)
2.(a)	Derive expressions for the elements of the Jacobian matrix of Newton-Raphson load flow.	(12)
(b)	Discuss the applications of the optimum multipliers when incorporated into Newton-Raphson load flow.	(8)
3.(a)	Why line resistance and capacitances are generally ignored in fault analysis of power systems?	(5)
(b)	Why Symmetrical components are used in fault analysis?	(5)
(c)	Derive the fault admittance matrix for a line to line fault.	(10)
4.(a)	How the optimum power flow is different from ordinary power flow?	(5)
(b)	Explain how linear programming may be used for optimum power flow analysis.	(15)
5.(a)	Explain the necessity of contingency analysis in power system.	(5)
(b)	How active and reactive power contingencies are ranked?	(8+7)
6.(a)	Differentiate between the voltage and angle stability problems.	(5)
(b)	Discuss the steps needed for the solution of the Transient Stability problem.	(15)
7.	How the Generators and loads are modeled for Reliability analysis using LOLE approach?	(10+10)
8.	Briefly discuss the following:	
(a)	Reliability modelling of repairable components connected in series.	(10)
(b)	Modification of Bus impedance matrix to include a new branch.	(10)