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Code: 17EEPC1T1

I M.Tech - I Semester – Supplementary Examinations February 2020

## ADVANCED COMPUTATIONAL METHODS IN POWER SYSTEMS (POWER SYSTEM & CONTROL)

Duration: 3 hoursMax. Marks: 60Answer the following questions.

- 1. a) Discuss the formation of network matrices by singular transformation. 7 M
  - b) Define the following: 8 Mi. Graph ii. Bus incidence Matrix
    - iii. Loop incidence Matrix iv.Branch path Incidence.

## (**OR**)

2. a) Form Y-Bus for the network, using singular transformation

11 M

Element	Positive sequence
	reactance
E-A	0.04
E - B	0.05
A – B	0.04
B – C	0.03
A –D	0.02
C – F	0.07
D-F	0.10

0 1 1

3. Describe the Newton- Raphson method for the solution of power flow equations in power systems by deriving necessary equations.15 M

## (OR)

- 4. Explain clearly with a detailed flow chart, the computational procedure for load flow solution using decoupled method deriving necessary equations.
  15 M
- 5. Obtain a step by step procedure of analyzing a L-G fault on a power system by bus impedance matrix method and explain.

15 M

## (OR)

6. a) Derive the algorithm for symmetrical short circuit and	alysis
of a multi machine power system using $Z_{bus}$ matrix.	8 M
b) Explain about Line to ground fault.	7 M

- 7. a) Explain the analysis of single line contingency. 8 M
  - b) Explain the analysis of multiple line contingency. 7 M (OR)

8. Develop the Expression for Z<sub>bus</sub> building algorithm, if the elements added is a link which is mutually coupled with another element.
 15 M