PVP 14

Code: EE7T5A

IV B.Tech - I Semester – Regular / Supplementary Examinations
March - 2021

COMPUTER METHODS IN POWER SYSTEMS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11 x 2 = 22 M

1.

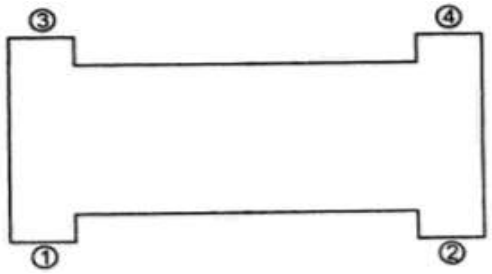
a) Write the list of incidence matrices.
b) Define the tree. Write the properties of a Tree.
c) Write advantages of Z_{BUS} in power system analysis.
d) Write a formula to find Z_{BUS} when new bus with impedance Z_b is connected to reference bus.
e) Why we go for load flow analysis?
f) What are the advantages of NR method?
g) What is meant by power system security?
h) Define steady state stability.
i) Write the swing equation and describe the variables.
j) What are the methods used for solve swing equation?
k) Explain branch-path incidence matrix.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. Determine the incidence matrices A, B, B', C, C' and K. From that verify the following relations shown in Figure. Take 1 as ground bus. 16 M



3. a) Explain open circuit fault. 4 M

b) Explain step-by-step method of formation of Z_{BUS} considering all four cases. 12 M

4. a) What is the size of Y_{BUS} matrix for n bus power system? Draw the network and find bus admittance matrix using direct inspection method. 12 M

Bus code	Line impedance (p.u)	Charging admittance (p.u)
1-2	0.2+j0.8	j0.02
2-3	0.3+j0.9	j0.03
2-4	0.25+j1	j0.04
3-4	0.2+j0.8	j0.02
1-3	0.1+j0.4	j0.01

b) Derive static load flow equation. 4 M

5. a) Draw a flow chart for contingency analysis procedure. 8 M

b) Explain Contingency analysis using sensitivity factors. 8 M

6. Write a short note on the following terms. 16 M

a) Power system stabilizer(PSS) representation.

b) Transient stability algorithm using modified Euler 's method.