## SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
### (AUTONOMOUS)
## B.Tech III Year II Semester Regular Examinations August-2023
### POWER SYSTEM ANALYSIS
(Electrical and Electronics Enginerring)

**Time: 3 Hours**　　　　　　　　　　　　　　　　　　　　　　**Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

### UNIT-I

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | What are the different power system elements in the power system network? | CO1 | L1 | 6M |
| | b | Define the terms<br>i) Graph　　ii) Sub-graph　　iii) Tree　　iv) Co-tree<br>v)Planar Graph  vi) Branch and Links | CO1 | L2 | 6M |

**OR**

2 For the following data form the bus admittance matrix by using By Direct inspection Method if the line series impedances are as given.　　CO1　L3　12M

| | |
|---|---|
| 1-2 | 0.15+j0.6 p.u |
| 1-3 | 0.1+ j0.4 p.u |
| 1-4 | 0.15+j0.6 p.u |
| 2-3 | 0.05+5j0.2 p.u |
| 3-4 | 0.05+j0.2 p.u |

### UNIT-II

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Derive an expression for the fault current for the LG fault.<br>i) with impedance　　ii)without impedance | CO3 | L3 | 6M |
| | b | Derive an expression for the fault current for the LL fault<br>i)with impedance　　ii)without impedance | C03 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | Explain in brief different types of reactors. | CO2 | L2 | 6M |
| | b | A three phase generator with constant terminal voltages gives the following currents when under fault: 1400 A for a line-to-line fault and 2200 A for a line-to-ground fault. If the positive sequence generated voltage to neutral is 2 ohms, find the reactance of the negative and zero sequence currents. | CO3 | L2 | 6M |

### UNIT-III

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | What is load flow analysis? What is the necessity for load flow studies? | CO2 | L2 | 6M |
| | b | Write short notes on (i)Load Bus (ii) generator bus (iii)Slack bus | CO2 | L2 | 6M |

**OR**

6 Write step by step algorithm for Gauss-seidel method with PV buses. Draw the flow-chart.　　CO2　L3　12M

### UNIT-IV

7 Write Step by step algorithm for N-R Rectangular Coordinate Method when PV Bus is present.　　CO5　L2　12M

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8 | a | Write the Comparison of Gauss-Seidel & Newton Rapson Method. | CO5 | L2 | 6M |
| | b | Explain about Fast Decoupled Load Flow Method. | CO5 | L3 | 6M |

### UNIT-V

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | What is stability? Explain different types of stabilities. | CO6 | L2 | 6M |
| | b | Explain about power angle curve. | CO6 | L3 | 6M |

**OR**

10 Discuss the various methods of improving steady state stability.　　CO6　L2　12M

*** END ***