Hall Ticket No | | | | | | | | | | | Question Paper Code: AEE012

INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)

B.Tech VI Semester End Examinations (Regular), November – 2020

Regulation: IARE–R16

POWER SYSTEM ANALYSIS

Time: 2 Hours **(EEE)** **Max Marks: 70**

Answer any Four Questions from Part A
Answer any Five Questions from Part B

PART – A

1. Mention the properties of bus admittance matrix. **[5M]**
2. Compare and contrast various load flow methods used in power system studies. **[5M]**
3. Distinguish between steady state, transient and dynamic stability of a power system. **[5M]**
4. Give the list of methods improving steady state stability of the power system. **[5M]**
5. What do you understand by critical clearing time and critical clearing angle? **[5M]**
6. Write the assumptions to be considered decoupled and fast decoupled load flow methods. **[5M]**
7. Classify various types of buses in a power system for load flow studies. **[5M]**
8. Write short notes on per unit system in power system and its importance. **[5M]**

PART – B

9. Develop the algorithm for formation of bus impedance matrix when link is added. **[10M]**
10. Write the bus – branch incidence matrix and use it to obtain Y_{BUS}. Select arbitrary directions. **[10M]**
11. Explain Gauss-Seidel iterative method for power flow analysis of any given power system with a flow chart. **[10M]**
12. The data for 2-bus system is given below. SG_1=Unknown; SD_1=Unknown V_1=1.0p.u. ; S_1= To be determined. SG_2=0.25+jQG2 p.u.; SD_2=1+j0.5 p.u. The two buses are connected by a transmission line p.u. reactance of 0.5 p.u. Find Q_2 and angle of V_2. Neglect shunt susceptance of the tie line. Assume $|V_2|$=1.0, Perform one iterations using GS method. **[10M]**
13. Determine the expression of the fault current for a line to line fault on an unloaded generator and draw its equivalent circuit. **[10M]**
14. Obtain the necessary equation to determine the fault current for a three phase fault on an un-loaded alternator and draw the equivalent network diagram. **[10M]**
15. Explain why transient stability limit is lower than steady state stability limit and determine the expression for steady state stability using ABCD parameters. **[10M]**
16. Determine an expression for the synchronizing power coefficient and mention its significance with respect to stability. **[10M]**
17. Describe the equal area criterion for transient stability analysis of a power system. Explain in detail the case of sudden change of mechanical input. **[10M]**
18. Explain what is “Swing Curve”.Explain its practical significance in stability analysis. **[10M]**

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