Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **14EE2014** | **Duration :** | **3hrs** |
| **Sub. Name :** | **POWER SYSTEM ANALYSIS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | | **Marks** | |
| 1. |  | Draw the reactance diagram for the power system shown in fig. Neglect resistance and use a base of 100MVA , 220KV in 50KΩ line. The ratings of the generator motor and transformer are given below.    Generator : 40MVA, 25KV ,X’’ =20%  Synchronous Motor : 50MVA , 11KV, X’’ =30% T1:Y-Y  transformer : 40MVA 33/220KV, X=15% T2:Y- Y  transformer : 30 MVA 11/220KV, X=15% | | CO1 | 20 |
| (OR) | | | | | |
| 2. |  | Draw the pu impedance diagram for the system shown in figure 5. Choose Base MVA as 100 MVA and Base KV as 20 KV. | | CO1 | 20 |
|  |  |  | |  |  |
| 3. | a. | Derive the fault current expression for single line to ground fault occurs in a power system network. | | CO2, CO1 | 12 |
|  | b. | Obtain the YBus using singular transformationfor the 3-bus sample system shown in below Figure. | | CO2,  CO3 | 8 |
| (OR) | | | | | |
| 4. |  | Explain briefly about the formation of bus impedance matrix with an illustration. | | CO2,  CO3 | 20 |
|  |  |  | |  |  |
| 5. |  | Derive Gauss-Seidal algorithm for load flow studies. Give the flow chart and step by step procedure to implement the algorithm. | | CO2,  CO3 | 20 |
| (OR) | | | | | |
| 6. |  | Explain the step by step computational procedure for the Newton Raphson method in load flow studies with appropriate expression. | | CO2,  CO1 | 20 |
|  |  |  | |  |  |
| 7. |  | A power plant has three units with the following fuel cost equations:  The demand is 800MW.Neglecting Line losses and generator limits. Find the optimal scheduling and also fuel cost. | | CO2, CO3 | 20 |
| (OR) | | | | | |
| 8. | a. | Explain the various constraints in unit commitment problem with suitable examples. | | CO2, CO3 | 10 |
|  | b. | Give the elementary idea of optimal load scheduling of Hydro - Thermal plants. | | CO2 | 10 |
|  | |  | |  |  |
|  | | **Compulsory**: | |  |  |
| 9. | a. | Derive swing equation for a single machine connected to infinite bus system. State the assumptions. Damping is not to be neglected. | | CO2,  CO1 | 15 |
|  | b. | Brief about Power Quality issues and consequences | | CO2,  CO1 | 5 |

ALL THE BEST