Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering
End Sem Examination Dec-2023
EE3CO40 / EX3CO40 Power System -II

Programme: B.Tech. Branch/Specialisation: EE/EX

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Power flow equations are- **1**
(a) Linear algebraic (b) Non-Linear algebraic
(c) Linear Differential (d) Non-Linear Differential

ii. Y bus is a- **1**
(a) Sparse matrix (b) Dense matrix
(c) Unity matrix (d) None of these

iii. Unit of loss coefficient matrix is- **1**
(a) MW (b) MW inverse (c) W (d) kW

iv. Exact co-ordination equation consider- **1**
(a) Line losses (b) Inductance
(c) Capacitance (d) None of these

v. Time constant of turbine system, as compared to generator load system time constant is- **1**
(a) Lower (b) Zero (c) Greater (d) None of these

vi. Z bus matrix is a- **1**
(a) Sparse matrix (b) Full matrix
(c) Unity matrix (d) None of these

vii. Two areas in load frequency control is connected through- **1**
(a) Delta line (b) Tie line (c) Star line (d) None of these

viii. Two area LFC control is analysed through- **1**
(a) Thevenin theorem (b) Norton theorem
(c) State space analysis (d) None of these

ix. Steady state stability limit is (in degree)- **1**
(a) 90 (b) 45 (c) 30 (d) 100

x. Transient state stability analysis is done by- **1**
(a) Unequal area criterion (b) Equal area criterion
(c) Star delta criterion (d) None of these

Q.2 i. Discuss per unit quantities with an example. **2**
ii. Explain impedance diagram of a power system. **3**
iii. Discuss Gauss-Seidel method of load flow analysis in detail. **5**
OR iv. Explain Newton Raphson method of load flow analysis in detail. **5**

Q.3 i. Explain the economic dispatch of generators. **3**
ii. Derive the coordination equation for the solution of economic dispatch problem. **7**
OR iii. What do you mean by economic load neglecting transmission losses? **7**

Q.4 i. Write and explain the transfer function for turbine system. **3**
ii. Draw and explain the block diagram for a single area load frequency control system. **7**
OR iii. Illustrate the steady state analysis of single area load frequency control. **7**

Q.5 i. What do you mean by two area control? **3**
ii. What is area control error (ACE)? Write ACE equations for two area load frequency control system. **7**
OR iii. Draw and explain the block diagram for two area load frequency control system. **7**

Q.6 Attempt any two:
i. Write and explain two methods of improving power system stability. **5**
ii. Derive for the swing equation of a synchronous machine connected to an infinite bus. **5**
iii. Explain the equal area criterion. **5**

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