CODE NO:- Z-330
FACULTY OF ENGINEERING
B.E. (EEP/EE/EEE)Examination - June– 2015
Power System Operation And Control
(Revised)

[Time: Three *Hours*]   **[Max. Marks: 100]**

"Please check whether you have got the right question paper."

i)   Question no 1 and Question no.6 is compulsory.
ii) Solve <u>any five</u> sub questions from Q.1 and Q.6.
iii) Solve <u>any two</u> questions from remaining questions in each section.
iv) Assume suitable data wherever necessary.

SECTION-A

Q.1   Solve <u>any five</u>   10
a)   Write down equations of MMF generated by three phases of synchronous machine and also draw wave forms.
b)   What are the d, q, o axis components?
c)   What is amortissuer circuit in synchronous machine?
d)   What is static excitation system?
e)   What is field forcing capability of excitation system?
f)   What are the roles of governer in power system operation and control?
g)   Draw load Vs frequesncy characteristics.

Q.2 a)   Derive the expression for swing equation.   08
      b)   In terms of modeling , explain startor circuit equations , mutual inductance between stator and rotor and rotor   07
           circuit equations.

Q.3 a)   With the help of functional block digram, explain all elements of excitation control system in detail.   08
      b)   Explain classical transfer function of hydraulic turbine with its special charactaristics.   07

Q.4 a)   Explain the classical model of single machine infinite bus system.   08
      b)   What is power system stability? Explain types of power system stability in detail.   07

Q.5   Write short notes on
      i) park's transformation.   05
      ii) DC exitation system.   05
      iii) Automatic voltage regulator.   05

SECTION-B

Q.6   Solve <u>any five</u>   10
a)   What is incremental cost?
b)   What is economic load dispatch?
c)   How shunt capacitors provides reactive power for voltage control?
d)   State how power factor correction limits system reactive power?
e)   What is contingency analysis?
f)   How active power control is done in power system?
g)   What is static VAR system?

Q.7 a)   Explain and derive the expression for long term hydrothermal scheduling problem.   08
      b)   Explain Economic load dispatch problem formulation.   07

Q.8 a)   Explain production and absorption of reactive power in power system equipments.   08
      b)   Explain any three methods of voltage control with schematic diagram in detail.   07

Q.9 a)   Explain different power system operating states with the help of schematic diagram and also explain evaluation of 08
           system state by contigency analysis.
      b)   Explain the roles of SCADA system in energy management system.   07

Q.10   Write short notes on
      i) maintenance scheduling   05
      ii) distribution system voltage regulation   05
      iii) automatic generation control.   05