

SUBJECT CODE- 8170
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E.(Electrical Power System) Examination Nov/Dec 2015
Electrical Machine Analysis & Modeling
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

N.B i) Attempt any two questions from each section.

ii) Assume suitable data, wherever necessary.

iii) Figures to the right indicate full marks.

Section A

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| Q.1 | a) Derive the energy balance equation for electromechanical system with magnetic field as coupling | 10 |
| | b) Discuss the winding configuration in synchronous machine and draw its resultant mmf. | 10 |
| Q.2 | a) Explain the elementary D.C, machine with its voltage equation | 10 |
| | b) Derive voltage and torque equation in terms of machine variables and draw equivalent circuit of d.C. machine. | 10 |
| Q.3 | a) Explain how transformation between two reference frame is possible. | 10 |
| | b) Apply q_{do} transformation to inductive circuit. | 10 |

Section-B

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| Q.4 | a) Derive the voltage equation in machine variables for 2-pole 3- phase star connected symmetrical induction machine | 10 |
| | b) Explain the dynamic performance sudden change in load torque of 2-pole, 3-pole, symmetrical induction machine | 10 |
| Q.5 | a) Derive the voltage equation in machine variables of 2pole, 3-phase salient pole synchronous machine | 10 |
| | b) Explain the analysis of steady state operation of synchronous machine | 10 |
| Q.6 | a) Explain the modelling of hydraulic turbine with neat diagram | 10 |
| | b) Explain with neat diagram D.C excitation system. | 10 |