

SUBJECT CODE NO:- P-323
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E. (EEP/EE/EEE) Examination MAY/JUNE-2016
Power System Operation & Control
(Revised)

[Time: Three Hours]

[Max Marks:80]

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

N.B

- i) Q.No.1 and Q.No.6 are compulsory.
- ii) Solve any five sub questions from Q.No.1 and Q.No.6.
- iii) Solve any two questions from remaining questions in each section.
- iv) Assume suitable data wherever necessary.

Section A

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|-----|--|----------------|
| Q.1 | <u>Solve any five</u> questions. | 10 |
| | <ol style="list-style-type: none"> a) Draw Load Vs Frequency characteristics of governor. b) What is Infinite Bus bar? c) What is tandem compounded type steam turbine? d) What is small signal angle stability? e) Write down MMF equations for three phases and also draw waveforms. f) Define d, q, o axis components. g) Define Inertia constant and kinetic energy stored by alternator rotor. | |
| Q.2 | <ol style="list-style-type: none"> a) Explain the elements of excitation system with the help of functional block diagram. b) What is power system stability? Explain types of power system stability in detail. | 08
07 |
| Q.3 | <ol style="list-style-type: none"> a) Explain the classical model of single machine infinite bus system. b) Explain stator voltage equations, rotor flux linkage equations in terms of dqo components. | 08
07 |
| Q.4 | <ol style="list-style-type: none"> a) Derive the expression for swing equation of synchronous machine. b) Explain classical transfer function of hydraulic turbine with its special characteristics and electrical analogue circuit. | 08
07 |
| Q.5 | Write short notes on- <ol style="list-style-type: none"> i. Brushless Excitation system ii. Automatic voltage regulator iii. dqo Transformation | 05
05
05 |

Section B

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|-----|---|----|
| Q.6 | <u>Solve any five</u> questions. | 10 |
| | <ol style="list-style-type: none"> a) What is optimum scheduling of hydrothermal system? b) Define incremental cost. c) How active power control is done in power system? d) What is contingency analysis? e) What is static VAR system? f) State how voltage control is done by using synchronous condenser? g) How shunt capacitors provides voltage control in power systems? | |

Q.7	a) Explain any four methods of voltage control in detail.	08
	b) Explain power system security assessment in detail.	07
Q.8	a) What is SCADA? Explain the role of SCADA system in energy management system.	08
	b) Derive the expression for problem formulation for economic load dispatch.	07
Q.9	a) Explain long term hydrothermal scheduling problem formulation.	08
	b) Explain production and absorption of reactive power in power system equipment's.	07
Q.10	Write short notes on-	
	i. Automatic generation control	05
	ii. Maintenance scheduling	05
	iii. Application of tap changing transformers to transmission systems.	05