

BE Semester-VIII (Electrical) Question Bank

Power System operation and Control

All questions carry equal marks (10 marks)

Q.1	Describe Least Square Estimate (LSE) and weighted LSE for estimation of x vector of n variable using another vector y of variable m where $m > n$
Q.2	Explain various applications of state estimations in a power systems
Q.3	Describe power system operating states with the help of a neat figure.
Q.4	What do you mean by state estimation? Discuss External System Equivalency.
Q.5	Explain how state estimation used in power system.
Q.6	In relation to state estimation process, explain detection, identification and suppression of bad data in the measurement vector.
Q.7	Explain what is power system security?
Q.8	Explain transition from an alert state to an emergency state of power systems of operation using a suitable example.
Q.9	What is voltage stability? Explain different types of voltage stability
Q.10	What is reactive power compensation? Explain reactive power compensation of radial transmission line for; (1). On no load and (2). Heavy loading condition
Q.11	What is voltage collapse? Explain the main factors that contribute the phenomena of voltage collapse.
Q.12	Derive the expression of critical voltage and critical angle at receiving end at voltage stability limit for two bus system
Q.13	For a three phase lossless transmission line has inductive reactance of 0.6 ohm/km and capacitive admittance is 50 $\mu\text{s}/\text{km}$. If the system voltage at the sending end is 220 kv (L-L) and the line length is 100 km. Find (1) Electrical line length of the line (2) surge impedance of line (3)receiving end voltage at no load with sending end voltage as reference(4) sending end current (5) reactive power at sending end and (5) surge impedance loading .
Q.14	Enlist different types of reactive power compensation methods for heavily loaded and voltage stressed power systems. Explain static VAR compensators in detail.
Q.15	Discuss the sources of reactive power generation in the power systems.
Q.16	Write short note on load forecasting.
Q.17	Explain load forecasting methodology and estimation of average and trend terms.
Q.18	For a transmission line connected between two buses, derive the expression of voltage regulation and also prove from the phasor diagram that the Q and V have a strong coupling.
Q.19	Explain load forecasting methodology and estimation of average and trend terms
Q.20	Explain static and dynamic state estimation of power system.
Q.21	Describe Auto-Regressive Model and Auto- regressive Moving Average Model for load forecasting
Q.22	Discuss factors affecting voltage stability
Q.23	Discuss concept of mechanism of voltage collapse

Q.24	Describe structure of deregulated (restructured) power industry.
Q.25	Describe structure of vertically integrated utility in brief
Q.26	Write a short note on Indian scenario of power industry and electricity act 2003.
Q.27	Derive expression of mid-point voltage of a transmission line in terms of real power flow and line length.
Q.28	Discuss reactive compensation methods for heavily loaded and voltage stressed power system to enhance voltage stability
Q.29	Explain in detail as related to power system security: 1. System monitoring 2. Contingency Analysis
Q.30	Explain system state classification with relevant figure clearly indicating all security levels and transition between different security levels.
Q.31	What is black-out in a power system? When can it occur? Explain power system restoration after black-out.
Q.32	Describe process of restoration after a black out.
Q.33	What do you mean by Demand side management? Explain in detail.