

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - VIII ELECTRICAL : WINTER- 2022
SUBJECT : COMPUTER APPLICATIONS IN POWER SYSTEMS

Day : Monday

Time : 02:30 PM-05:30 PM

Date : 28-11-2022

W-13349-2022

Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

- Q.1** a) Enlist various components used in power system modeling. Explain modeling of any two components in detail. [05]
b) What is the role of digital computers in power systems? Explain view point as electrical engineer for power system. [05]
- OR**
- a) What is the difference in modeling of power system simulations in ETAP and MATLAB software? [05]
b) Explain modeling of transmission lines and two-winding transformer in detail. [05]
- Q.2** a) What is the difference between renewable energy systems and energy storage systems? Explain computer applications in energy storage systems. [05]
b) Explain centralized monitoring system for solar system design with block diagram. [05]
- OR**
- a) Explain with diagram the computer applications in Tidal and wave energy. [05]
b) Explain with diagram the monitoring maintenance of solar energy design. [05]
- Q.3** a) Explain with example and algorithm for Gauss-Seidel load flow method. [05]
b) What is the difference between Newton Raphson Polar and Rectangular methods? Write equations for both methods. [05]
- OR**
- a) What is sensitivity analysis? Explain algorithm for fast decoupled load flow method. [05]
b) Derive power flow equations for fast decoupled power flow method with suitable assumptions. [05]
- Q.4** a) Explicate with example the algorithm steps to formulate and solve an AC-DC load flow problem. [05]
b) Explain the formulation of sequence impedance matrix for fault analysis in power system. [05]
- OR**
- a) Explain Runge-Kutta method of solution for Transient stability analysis. [05]
b) Derive converter and inverter equations for DC load flow with suitable notations. [05]
- Q.5** a) Explicate the optimal power flow analysis with inequality constraints. Write the inequality equations. [05]
b) What are transmission loss coefficients? Explain them in details. [05]
- OR**
- a) What is power loss in a transmission line? Explain transmission loss coefficients. [05]
b) Explain classical method for economic dispatch with limits. [05]
- Q.6** a) What are linear sensitivity factors? Explain algorithm for contingency evaluation. [05]
b) What is power system security? Explain the concept of security with block diagram. [05]
- OR**
- a) Explain : i) contingency analysis tool in simulator ii) major components of online-security assessment. [05]
b) What are various operations states of power system? Draw block diagram and explain function of each state. [05]