

7E7041**7E7041****B.Tech. VII Semester (Main) Examination, Dec. - 2015****Electrical & Electronics Engg.****7EX1A Power System Planning****EE, EX****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) Explain the power system planning. Explain the strategic planning, long term planning and short term planning. ?Explain the electricity forecasting and its types also. (8)
- b) Mention and explain factors affecting the load of utility in forecasting modeling. With the help of neat diagram, explain least cost utility planning. (8)

OR

1. a) List the challenges faced by power system planning engineers. Explain the power system planning process. Enumerate the cyclical components of planning. (8)
- b) Discuss different stages of preparation of Detailed project report (DPR) for planning power projects. With the help of a neat diagram, explain least cost utility planning. Explain different time frames of load forecasting. (8)

Unit - II

2. a) What are the basic process of cogeneration what are its benefits and explain the strategies for transmission system expansion in India. (8)

- b) Enumerate elaborately on the desirable generation options for next 25 years for India as per CEA and World bank. Write descriptive notes on
- i) Boiler renovation and
 - ii) Power policy and trading. (8)

OR

2. a) Write a descriptive note on selection of voltage levels in India for the transmission and distribution. Explain concept of rational tariffs. (8)
- b) Explain power pooling and trading in India and its role in power system planning. Explain the components of rural electrification planning. (8)

Unit - III

3. a) Enumerate different trades and issues that planners and operators have to cope with during reliability planning. Explain the various methods of load management. (8)
- b) Describe the two methods of reliability assessment. Write a descriptive note on CEA's reliability planning criterion. (8)

OR

3. a) Explain system adequacy and security of power system reliability. Explain reliability evaluation and calculations. Explain basic methods to evaluate generation reliability. (8)
- b) What do you mean by state estimation. Explain with the help of block diagram the function of state estimation and also explain the function of power system simulator. (8)

Unit - IV

4. a) What is insulation coordination and explain the principle of insulation coordination. (8)
- b) Explain the green house effect and its technological impact. Define wheeling in power system and list the typical objectives of wheeling. (8)

OR

4. What the sources of generation and absorption of reactive power in transmission and distribution lines. (16)

Unit - V

5. a) Explain main steps in Optimal power system planning and WASP programme for generation system expansion planning. (8)
- b) Explain seven modular programmes of WASP package with block diagram representation. (8)

OR

5. a) Explain formulation of least cost optimization problem incorporating the capital with block diagrams. (8)
- b) Explain minimum assured reliability constraints by using optimization techniques of solution by programming. (8)