NR/OR

Code No. OR-NRB0705

JAWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, HYDERABAD
M .Tech. II Semester Supplementary Examinations, March – 2009
POWER SYSTEM RELIABILITY
(Electrical Power Systems)

Time: 3 hours **Max. Marks. 60**

Answer any Five questions
All questions carry equal marks

1.a) Explain the concept and evaluation techniques of loss of load indices.
b) A generating station contains three 25 Mw generating units each with a 4% FOR and one 30 Mw unit with a 5% FOR. If the peak load for a 100 day period is 75 Mw, what is the LOLE and EIR For this period? Assume that the appropriate load characteristic is a straight line from 100% to the 60% points.

2.a) Explain the evaluation of frequency and duration methods in generating system reliability analysis.
b) With the help of a simple 3 unit example, explain the fundamental development of generation model.

3. What are area risk curves? Explain the effect of rapid start and hot reserve units in spinning reserve studies.

4.a) Write notes on load point indices and common mode failures of composite system.
b) Derive an expression for probability of system failure applied to a radial configuration of a composite system.

5.a) Explain the concept of probability array method in two interconnected systems.
b) Consider the following systems:
System A: 6 x 50 Mw units – FOR – 4% peak load =240 Mw
System B : 6 x 100Mw units – FOR = 6% Peak load 480Mw the two systems are interconnected by a 50 Mw the line. Calculate the loss of load expectation in each system on a one-day basis.

6.a) What are evaluation techniques required to analyze a radial distributed system.
b) Explaining the concept of reliability indices, define various load point and loss and energy oriented system reliability indices.

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7.a) Explain the general concepts of evaluation techniques of temporary and transient failures.
b) Discuss the inclusion of weather effects in the reliability analysis.

8.a) Discuss open and short circuit failures and their impact on the reliability of power system components.
b) Write an algorithm for the simulation of active failure of switching event.

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