(2) BE - Sem-VIII - Electrical - PSPR - CBSGS 13/12

Q.P. Code : 17119

(Time: 3 Hours)

Please check whether you have got the right question paper.

Total Marks – 80

N.B.:- (1) Question No.**1** is compulsory.
(2) **Attempt** any **three** questions out of remaining **five** questions.
(3) Assume necessary data wherever necessary.

Q 1. Answer the following questions. **20**

a) Write short note on different types of outages that occur in power system. **5**

b) Prove that instantaneous hazard rate $\lambda(t) = \frac{f(t)}{R(t)}$ **5**

c) Draw a two state model of equipment. Define failure rate and repair rate **5**

d) What do you understand by spinning reserve and operating reserve. **5**

Q 2 a) Categorize loads in power system. Explain Load growth characteristics for various loads. **10**

Q 2 b) What do you understand by system planning. Explain main aims of Long Term and Short term planning. **10**

Q 3 a) Explain different mathematical approaches to load forecasting. **10**

Q 3 b) Explain in detail reactive power planning. **10**

Q 4 a) Find reliability of system shown in figure-1 using minimum cut set method if reliability of each component is 0.9 **10**

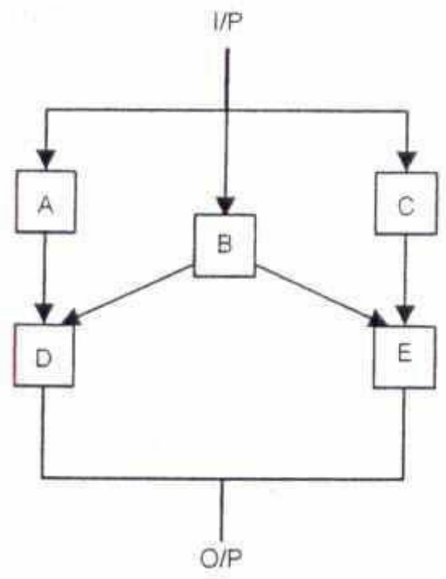

Figure-1

Q 4 b) A generating system contains three 25 MW generating units each with FOR = 4% and one unit of 30MW unit with FOR=5%. Prepare capacity outage table. **10**

Q 5 a) What is the importance of Markov Process in reliability of power system. Derive the expression of availability and unavailability **10**

Q 5 b) Explain Modified PJM method in detail. **10**

Q 6 a) A generating system consists of 2 units of 30MW and 1 unit of 60MW with λ=0.01f/day and repair μ= 0.49 r/day. Construct generation model. Also, find rate of departure and frequency of occurrence of each capacity outage state. **10**

Q 6 b) A power system is having 5 units of 100MW units each with FOR= 0.03. Find loss of Energy Expectation (LOEE) and EIR. The peak load is considered to be 400 MW and base load is 150MW. **10**
