**MSPS03**

**MTEE16B3/MTETE16F3**

**MODEL QUE PAPERS**

**M.TECH**

**IV Semester**

**SPE: (POWER SYSTEM CONTROL)**

**POWER SYSTEM RELIABILITY**

Time: 3 Hours Max. Marks: 75

***INSTRUCTIONS:***

* *Question paper is divided into three groups.*
* *Each group is of 25 marks.*
* *Figure to the right in bracket indicates mark.*
* *Assume suitable data if necessary.*

**GROUP A : Answer any three questions. (Question No. 1 is compulsory)**

Q.1 Explain the common mode failures & the process of evaluation of common mode failures. (05)

Q.2 Discuss basic evaluation approaches and cost of interruption surveys. (10)

Q.3 Prove that there is no net power in a three-phase circuit attributable to voltage of one sequence in conjunction with a current of a different sequence. (10)

Q.4 Explain LOLE with graph. (10)

Q.5 Explain generating station reliability and its standby mode. (10)

**GROUP B : Answer any three questions. (Question No. 6 is compulsory)**

Q.6 The life of a bearing is normally distributed with an average value of 2000 hrs and a standard deviation of 100 hrs. What is the probability of a bearing that it fails between the 1964 hrs to 2016 hrs? (05)

Q.7 Explain two stage repairs and installation process & its different types in detail. (10)

Q.8 A pump has a useful life failure rate of 100 failure per 106 hours. A mean Wear out life of 10,000 hr. with a standard deviation of 2000 hr. Assuming that the wear out failure distribution is normal, evaluate the reliability of the pump for (a) a 100 hr mission starting at the 9900 hour point of its life cycle and, (b) a similar mission starting 1000 hours Later. (10)

Q.9 Derive a formula for the transient stability limit of a two-machine reactance system subjected to a fault on a radial and its subsequent clearing by disconnected of at the feeder at a clearing angle. (10)

Q.10 Draw the Zero-Sequence equivalent circuit of two-circuit transformer banks? (10)

**GROUP C: All Questions are Compulsory.**

**Q.11 Fill in the blanks (Each question carries 2 marks)**

(i) The normal distribution is also referred as \_\_\_\_\_\_\_\_.

(ii) Event tree is \_\_\_\_\_\_\_\_\_\_\_ representation of all events which can occur in the system.

(iii) MTTF means \_\_\_\_\_\_\_\_\_\_.

(iv) LOLP means \_\_\_\_\_\_\_\_\_\_.

(v) The loss of service to one or more consumer’s \_\_\_\_\_\_\_\_\_.

**Q.12 Multiple choice question. (Each question carries 2 marks)**

(i) Evaluation of generation capacity requirements is a \_\_\_\_\_\_.

(a) Long-term planning of system security

(b) Operational planning of system security

(c) On-line operation application of system security

(d) All of these

(ii) Security control system is a system of \_\_\_\_\_\_\_\_\_\_\_.

(a) Manual control

(b) Integrated automatic control

(c) Conventional generation control

(d) Both (a) and (b)

(iii) Total no. of customer interruption / total no. of customers affected are \_\_\_\_\_\_\_\_.

(a)SAIDI

(b) CAIFI

(c) ASAI

(d) AENS

(iv) Total energy not supplied / total no. of customer served is \_\_\_\_\_\_\_\_.

(a)ACCI

(b) AENS

(c) SAIDI

(d) SAIFI

(v) Total no. of customer interruption / total no. of customer served are \_\_\_\_\_\_\_\_\_\_.

(a)AENS

(b) SAIDI

(c) ACCI

(d) SAIFI

**Q.13 True or false (Each question carries 1 marks)**

(i) The frequency and duration concepts can be applied to any side of repairable system.

(ii) The partially redundant systems are also known as majority vote systems.

(iii) One of the methods of earthing is pipe earthing.

(iv) The Melting point of copper is 12830 c.

(v) The CGS unit of resistivity is Ω m.

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