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Test-3 EXAMINATION- May2018

M.Tech.(ECE), 4th Sem

COURSE CODE: 11M1WEC433 MAX. MARKS: 35

COURSE NAME: Fault-Tolerant Systems

COURSE CREDITS: 03 MAX. TIME: 2 hr.

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1. Mention two independent performance measures those are useful for measuring the performance of telecommunication networks. [3]

Q2. The following data was collected for a optical leased line:

Mean time between failures = 500 Hr

Mean waiting time for spares = 5 Hr

Mean time for repairs = 48 Hr

Mean administrative time = 2 Hr

Compute the availability of leased line. [3]

Q3. An optical link in computer network have a minimum reliability of 0.8 and a minimum availability of 0.98 over a period of 2000 hours. Determine the mean repair time and frequency of failure of the link. [4]

Q4. What is factoring theorem or Bay's theorem? Explain its use for finding the reliability of non-series parallel systems. [3]

Q5. Derive the equations for following systems:

(a) Single element (repairable as well non-repairable)

(b) Two element (repairable as well non-repairable)

Also draw the Markov graph for each case. [4]

Q6. A sample contains 1500 units of an engineering product. The failure probability of a unit is 0.0005. Calculate the probability of 5 units failing out of the entire sample. [3]

Q7. (a) Explain the catastrophic failure and degradation failure.

(b) Explain the life a device by drawing a curve between failure rate (as a function of age) vs. time [4]

Q8. How one can mask a fault for the case of computer communication network? [3]

Q9. Differentiate with examples -- performance failure, hard failure, soft-failure in a computer communication network. [4]

Q10. What do you mean by the career class communication? Explain the concepts of Quality of Service and Service Level Agreement in communication. [4]