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10MT82

Eighth Semester B.E. Degree Examination, July/August 2022
Reliability and Fault Tolerance

Time: 3 hrs

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. What is Basic Concept of Reliability? Explain Reliability and Quality. (08 Marks)
b. Explain briefly Bathhtub Curve, with an example. (12 Marks)
- 2 a. Explain Failure Mode Affix of Critically Analysis (FMECA) and Fault Tree Analysis (FTA). (10 Marks)
b. Explain Design for Higher Reliability. (10 Marks)
- 3 a. Define Critical maintenance and explain Basic Method of Maintenance System. (10 Marks)
b. Explain common type of Failure in Components. (10 Marks)
- 4 a. Explain Machine / Product Life Cycle, with neat sketch. (10 Marks)
b. Explain Top – down method and Bottom – up method. (10 Marks)

PART – B

- 5 a. Define Fault Tolerance. Explain Faults classification. (06 Marks)
b. List Failure Masking by Redundancy. (04 Marks)
c. Explain Failure Models. (10 Marks)
- 6 a. Explain Fault – Tolerance Control System. (10 Marks)
b. Explain Hardware Sensor Redundancy. (10 Marks)
- 7 a. Explain Failure Modes and Effects Analysis (FMEA). (10 Marks)
b. Explain Event Trees and Fault Trees. (10 Marks)
- 8 a. Explain Fault detection and Diagnosis of DC Motor. (10 Marks)
b. Explain Fault detection and Diagnosis of a Simple Industrial Robot. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.