

14 JUL 2023

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Question Paper Code	12001
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M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL/MAY 2023
Second Semester
M.E - CAD/CAM
20PCDEL202 - RELIABILITY IN ENGINEERING SYSTEMS
(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. List the types of life calculation. | <i>2,K1,CO1</i> |
| 2. Examine priori probability. | <i>2,K2,CO1</i> |
| 3. How do ungrouped and grouped differ? | <i>2,K2,CO2</i> |
| 4. Quote some conditions required for goodness-of-fit. | <i>2,K2,CO2</i> |
| 5. Describe how passive redundancy and active redundancy differ. | <i>2,K2,CO3</i> |
| 6. What is series configuration? Give example. | <i>2,K1,CO3</i> |
| 7. Why Reliability Monitoring is essential? | <i>2,K2,CO4</i> |
| 8. Examine some of the problems faced by software reliability test. | <i>2,K2,CO4</i> |
| 9. 100 % reliability of all the components of a machine or equipment is not always aimed to achieve. Why? | <i>2,K2,CO5</i> |
| 10. What are the assumptions of replacement theory? | <i>2,K1,CO5</i> |

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

- | | |
|---|------------------|
| 11. a) Classify the characteristics and functions of a Bath tub curve. | <i>13,K2,CO1</i> |
| OR | |
| b) Illustrates the importance regarding the measures of reliability in monitoring. | <i>13,K2,CO1</i> |
| 12. a) What is Time to Failure Distribution? Explain with any of two distributions. | <i>13,K2,CO2</i> |
| OR | |
| b) Illustrate exponential distribution with suitable example. | <i>13,K2,CO2</i> |
| 13. a) Explain Active and Standby Redundancy in detail. | <i>13,K2,CO3</i> |
| OR | |

- b) Analyze the characteristics and functions of tie sets in RBD. *13,K2,CO3*
14. a) Explain different types of Reliability Allocation in detail. *13,K2,CO4*
- OR**
- b) (i) Illustrate the influence of wear out in quality sustainment. *7,K2,CO4*
(ii) Discover the importance of termination models in reliability monitoring. *6,K2,CO4*
15. a) Write short notes on Mean down time (MDT) with examples. *13,K2,CO5*
- OR**
- b) How Reliability in Design is assessed for (i) series system, (ii) parallel system, (iii) series-parallel system. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) A requirement exists for an engine fuel pump to be required (or replaced) within 3 hours 90% of the time. If the repair distribution is lognormal with $s = 0.45$, What MTTR should be achieved to meet this goal? *15,K2,CO5*
- OR**
- b) Explains Chi - Square Fitness of Good Test in detail. *15,K2,CO2*