

(3 Hours)

Total Marks: 80

Note:

1. **Question No. 1 is compulsory.**
2. Attempt any **THREE** out of the remaining **FIVE** questions.
3. Assume suitable data if necessary.

- Q. 1.** Answer **any FOUR** of the following: (20)
- (a) Define Maintainability and availability and compare it with reliability.
 - (b) Explain Skewness and Kurtosis.
 - (c) What is inspection and repair availability model? Explain a case for it.
 - (d) Differentiate between Maintainability and Availability
 - (e) Explain Weibull Model and how it is useful in reliability engineering?
- Q. 2.** (a) Explain reliability of Series and Parallel systems with example. (10)
 (b) Write short notes on Fault tree Analysis with a case study (10)
- Q. 3.** (a) Write short note on FMECA with an example. (10)
 (b) Explain Markov Analysis with an example. (10)
- Q. 4.** (a) What is mixed redundancy? (10)
 (b) Draw and explain Bath tub Curve (10)
- Q. 5.** (a) Compare unit vs Component Redundancy with sketches (10)
 (b) With a block diagram explain the reliability design process. (10)
- Q. 6.** **Attempt the following:-** (20)
- (a) Explain the term MTTF. Also derive it with respect to reliability and CDF
 - (b) What is MTBF?
 - (c) Define system effectiveness?
 - (d) Differentiate between Repair Vs Replacement