No. of Printed Pages : 03 **Roll No. .....**

CC-62

M. Tech. EXAMINATION, May 2018

(Third Semester)

(Re-appear Only)

ECE/Industry Integrated

MTEC603B

RELIABILITY ENGINEERING

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) How reliability and maintainability can be improved ? **7½**

(b) Define reliability explaining its need and various causes of failure. **7½**

2. (a) Discuss Poisson distribution. State its utility. **6**

(b) Discuss hazard rate function. Derive the relationship between hazard rate function and reliability function. **9**

Unit II

3. (a) Write technical note on static life estimation. **7½**

(b) Discuss *one* method to analyze grouped censored data. **7½**

4. (a) Derive the expression for expected test time. **9**

(b) Discuss scope of Arrhenius model and comment on its acceleration factor. **6**

Unit III

5. (a) Discuss Duane reliability growth model. **7**

(b) What is the objective of reliability growth testing ? Draw and explain idealized reliability growth curve. **8**

6. (a) Explain in brief Chi-square goodness of fit test. **7**

(b) Explain Mann's test for the Weibull distribution. **8**

Unit IV

7. (a) Draw and explain total cost versus availability curve. **7½**

(b) Explain stages of product life-cycle. **7½**

8. (a) What are various R and M data elements ? **7½**

(b) With suitable example illustrate burn in testing. **7½**