PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018 - 19 Examination

Semester: 6   Date:02/05/2019
Subject Code: 03112354   Time:10:30am to 01:00pm
Subject Name: Instrumentation Product Design   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (All are compulsory) (Each of one mark)   **(15)**
1. Aesthetic in the product is concerned with
    a) Beauty b) Design c) Both d) None
2. Probability that any one particular module will survive to its calculated MTBF is
    a)36.8% b) 45% c) 65% d) 85%
3. FTA examine system from
    a) Top-Down b) Down-Top c) Both d)None
4. In Bath-Tube Curve analysis, highest failure rates correspond to.
    a) Premature Failure b)Normal Service Failure   c) Wear out   d) Both a & c
5. For Non-repairable products reliability is quantified as
    a) MTBF b)MTTF   c) Both   d) None
6. The full form of FTA is_____.
7. For repairable products reliability is quantified as _____.
8. Ergonomics in the product is concerned with _____.
9. The full form of MTTF _____.
10. The full form of FMEA _____.
11. Explain Parallel redundancy.
12. Define: Fail Safe design.
13. Explain term Aesthetic.
14. Define term MTBF.
15. Explain term Ergonomics.

Q.2 Answer the following questions. (Attempt any three)   **(15)**
A) Explain the concept of 10X rule with reference to design error in product.
B) Explain Color Universal Design.
C) Suppose 10 devices are tested for 500 hours. During the test 2 failures occur. Calculate MTBF an MTTF.
D) Explain Electrical safety standards for control panel design considerations.

Q.3 A) Explain causes of component failure in a different life phase with its prevention.   **(07)**
B) Explain concept of bath-tube curve with reference to reliability.   **(08)**
OR
B) Discuss Aesthetic aspects of appearance in detail.   **(08)**
Q.4 A) Write approaches to minimizing the risk of catastrophic failure.   **(07)**
OR
A) Explain significance of Control Panel Component Colors.   **(07)**
B) Explain the term Anthropometry. Write its usage with example.   **(08)**