

**B.Tech. MECHANICAL ENGINEERING
(COMPUTER INTEGRATED MANUFACTURING) /**

B.Tech. AEROSPACE ENGINEERING (BTAE)

00823

Term-End Examination

December, 2018

BME-007 : QUALITY ENGINEERING

Time : 3 hours

Maximum Marks : 70

Note: Answer any *ten* questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. How do you justify the popularity of the concept of 'Total Quality Management' ? What are the three axioms of TQM ? 7
2. Discuss the components of ISO 9000. What are the documents required for implementation of ISO 9000 ? 7
3. Why are safety procedures becoming requirements of good management ? What steps are to be taken for safety and good health of workers under the guidelines of OSHA ? What benefits are expected from occupational safety policy ? 7

4. What are the measures of central tendency in a set of observations ? List them and give their applications. 7
5. What are (1) Failure Mode and Effects Analysis (2) Failure Modes and Critical Analysis ? Give basic analysis procedure. What are the applications and benefits of these analyses ? 7
6. How does quality affect cost of a product or process ? Distinguish between direct and indirect quality costs. How will the cost behave with improving quality awareness ? 7
7. A production line comprises A, B and C with reliabilities of 0.99, 0.96 and 0.93 respectively. The machines are arranged so that if one breaks down, the others must shut down. Engineers are weighing two alternative designs for increasing the line's reliability. Plan 1 involves adding an identical backup line, and Plan 2 involves providing a backup for each machine. In either case, three machines (A, B and C) would be used with reliabilities equal to the original three. Which plan will provide the higher reliability ? Justify your answer. 7

8. A complex electronic system consisting of electronic gadgets has MTBF 100 hours and MTTR of 120 minutes. Find the availability. 7

9. Enumerate the various types of inspection and explain briefly any two of them. 7

10. Explain briefly the term "Quality Control". What are the advantages and objectives of quality control ? 7

11. Deming suggests not to depend upon inspection to improve quality. Why ? Justify your answer with suitable example. 7

12. Write short notes on any **two** of the following : $2 \times 3 \frac{1}{2} = 7$

(a) Cause and Effect Analysis

(b) Root Cause Analysis

(c) Pareto Analysis

(d) Baldridge Award