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BME-007

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING) / B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

00845 **December, 2014**

BME-007 : QUALITY ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **seven** questions. All questions carry equal marks. Use of scientific calculator is allowed. Assume suitable data if required.*

1. Describe the concept of TQM. Discuss the various approaches to achieve TQM. *10*

2. Explain the steps used in hypothesis testing. Explain the statistical errors in detail. *10*

3. Describe the concept of Quality Function Deployment (QFD). Describe any two tools out of the seven Management and Planning Tools. List the merits and demerits of QFD. *10*

4. For the following data of width of a circuit breaker measured ten times, construct Mean-Range charts (X–Bar, R).

(Given A = 1·342, A_2 = 0·577 and D_1 = 0, D_2 = 4·918, D_3 = 0·00 and D_4 = 2·114) *10*

Sample No. → / Lot tested ↓	1	2	3	4	5
1	2·0	2·0	2·1	1·9	2·0
2	2·0	2·1	2·1	1·9	2·0
3	2·0	2·1	2·1	2·0	2·1
4	2·1	1·9	3·2	3·7	3·6
5	2·1	1·9	2·1	2·0	2·0
6	2·0	1·9	2·0	2·0	2·1
7	1·9	1·9	2·1	2·0	1·9
8	1·9	2·0	2·0	2·0	1·0
9	2·0	2·0	2·1	2·0	1·9
10	2·0	2·0	2·0	2·0	2·1

5. Write short notes on the following : *5+2+3=10*

(a) Cause and Effect Analysis

(b) Root Cause Analysis

(c) Pareto Analysis

6. What is meant by ISO-9000 ? Describe the various series of ISO. What are the benefits of ISO ? *10*

7. Explain the concept of 'Cost of Quality' and discuss its elements. Describe the various types of costs used in Quality Management. *10*

8. Define and explain the terms MTBF and MTTR. A system has mean time between failure of 120 hours and the inherent availability of 0·90. What is the mean time to repair ? *10*

9. Write short notes on any ***two*** of the following : *5+5=10*

   (a) "Six-Sigma" Quality Management

   (b) Philip Crosby's "Quality is free"

   (c) Taguchi's "Quality loss function"