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BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING) B.Tech. (AEROSPACE ENGINEERING)

Term-End Examination

December, 2012

BME-007 : QUALITY ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt **any ten** questions. All questions carry **equal** marks. Use of statistical table is permitted. Assume missing data if any.*

1. (a)   Differentiate between inspection and quality control.   3½

    (b)   Explain PDCA cycle.   3½

2. (a)   Explain the term "Quality Function Deployment". Also explain how it is used.   3½

    (b)   Discuss the application of quality function deployment (QFD) and the house of quality in fast moving consumer goods manufacturing company.   3½

3. (a) What do you mean by acceptance **3½**
sampling ? Discuss single sampling plan
and double sampling plan.

(b) Explain normal distribution. The length of **3½**
a machined part is known to have a normal
distribution with a mean of 100mm and a
standard deviation of 2mm. What
proportion of the parts will be above
103.3mm?

4. (a) Compare $\overline{X}$ chart with R chart. **3½**

(b) Ten electric motors were examined for **3½**
defects. The number of defects associated
with motors 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
were 6, 5, 11, 8, 11, 9, 9, 6, 7 and 8
respectively. Develop the C-chart.

5. (a) What is design of experiments ? **3½**

(b) What do you mean by six sigma approach **3½**
for quality control. Discuss different steps
for its implementation.

6. (a) What is meant by cost of quality ? **3½**

(b) Giving an example, explain how time **3½**
management affects quality.

7. (a) Explain different steps for implementing **3½**
ISO 9000.

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(b)   What do you mean by OSHA safety   3½
      standards ? Mention different benefits
      arising from OSHA.

8.   (a)   What is significance of Risk Priority Number   3½
            (RPN)? What is the follow up action after
            RPN is determined ?

      (b)   What do you mean by cause and effect   3½
            diagram? How it is connected to FMEA ?

9.   (a)   What do you mean by system reliability ?   3½
            Derive the expression of reliability for series
            structure and parallel structure.

      (b)   Total number of failures is 110. The total   3½
            number of maintenance hours used to
            correct the 110 failures is 660. Calculate
            maintain ability for 2, 4 and 6 hours.

10.   (a)   Discuss the procedure for selection of   3½
            supplier by a company. What are the three
            approaches to ascertain the capability of
            vendor to manufacture required part ?

      (b)   Distinguish between Deming Prize and   3½
            Baldrige Award.

11. (a) Discuss various types of Quality Costs. 3½
What kind of cost should a firm be more
concerned with ?

(b) What are common points in Juran's, 3½
Crossby's and Feigenbaum's Philosophies ?
What was Ishikawa's attitude towards
TQM ?

12. Write short notes on **any two** of the following : **3½+3½**

(a) Activity based costing

(b) Bath-tub curve

(c) Total predictive maintenance (TPM)

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