Question Paper Code : P 1426

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Seventh Semester

Mechanical Engineering

MG 1401 — TOTAL QUALITY MANAGEMENT.

(Common to Seventh Semester B.E./B.Tech Aeronautical Engineering, Automobile Engineering, Bio-Medical Engineering, Civil Engineering, Computer Science and Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Instrumentation and Control Engineering, Mechatronics Engineering, Metallurgical Engineering, Production Engineering and Information Technology)

(Also common to Eighth Semester – B.E./B.Tech – Bio Technology, Chemical Engineering, Polymer Technology, Textile Technology, Textile Tech (Fashion Technology) and Textile Tech (Textile Chemistry)

(Also Common to Sixth Semester – B.E. – Civil Engineering)

(Also Common to PE 1452 — Total Quality Management – Eighth Semester – B.Tech. – Petroleum Engineering)

(Regulation 2004)

(Also common to B.E. (Part-Time) Sixth Semester Regulation 2005. Electronics and Communication Engineering, Mechanical Engineering/Seventh Semester Electrical and Electronics Engineering)

Time : Three hours   Maximum : 100 marks

Use of Statistical Tables is permitted.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   State the seven underlying principles of TQM.

2.   Define quality cost index.

3. Define Customer Retention.

4. Define Employee empowerment.

5. Define process capability.

6. Define process capability ratio.

7. What do you mean by House of Quality?

8. Define failure rate.

9. Name the ISO 9000 series.

10. State the benefits of documentation.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the process of establishing cost of Quality.

Or

(b) State and explain the principles of TQM.

12. (a) Briefly explain Employee Motivation and Empowerment.

Or

(b) Explain Juran Trilogy.

13. (a) In a factory producing spark plug the number of defective found in inspection of 20 lots of 100 each, is given below.

Lot No.	No. of Defective	Lot No.	No. of Defective
1	05	11	04
2	10	12	07
3	12	13	08
4	08	14	03
5	06	15	03
6	04	16	04
7	06	17	05
8	03	18	08
9	03	19	06
10	05	20	10

(i) Construct appropriate control chart and state whether the process is in statistical control. (8)

(ii) Determine the sample size when a quality limit not worse than 9% is desirable and a 10% bad producer will not be permitted more than three times in thousand. (8)

Or

(b) The 'X' company produces synthetic and natural gut castings for a process meat packer, natural gut materials are visually inspected upon receipt, graded and sent to processing. After processing, all finished castings are tested under pressure on a special device to ensure a specified strength before shipping to the meat packer. During the past 25 lots of 500 castings each have been subjected to 100% Inspection. A total of 1000 casting burst during test.

(i) Find 3σ limits for a control chart for p. (8)

(ii) Assuming that all points fall within these limits, what is your estimate of the process average fraction non-conforming? (8)

14. (a) Explain the procedure to construct a 'House of Quality'.

Or

(b) Explain the Taguchi's Quality Loss Function.

15. (a) Explain how quality audit should be conducted.

Or

(b) Explain concepts of ISO 14001.

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