

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2938

Roll No.

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B. Tech.

(SEM. VIII) THEORY EXAMINATION 2011-12

SIX SIGMA METHODS AND APPLICATIONS*Time : 3 Hours**Total Marks : 100***Note :—**(1) Attempt *all* questions.

(2) All questions carry equal marks.

(3) Be precise in your answer.

1. Attempt any *four* of the following questions :— (5×4=20)

- (a) What activities are to be performed for quality in manufacturing and in service sector ?
- (b) Briefly write the Six Sigma Success Story of General Electric.
- (c) What do you mean by quality improvement ? Write diagnostic methods to test theories of management-controllable problems.
- (d) What is inferential statistics ? Define median, range, standard deviation and Kurtosis.
- (e) What is histogram ? How it is constructed ?
- (f) Explain binomial distribution.

2. Attempt any *four* of the following questions :— (5×4=20)

- (a) Explain the concept of six sigma system.
- (b) Define defect and explain sporadic condition and approach for handling sporadic problems.

- (c) A process produces 40,000 pencils. Three type of defects can occur. The number of occurrence of each defect type are :

Blurred printing (as pencil slips in the fixture) = 36

Wrong dimension (at three independent place) = 118

Rolled ends (at top and/or bottom) = 11

Find out DPMO

- (d) Explain customer focus.
- (e) What are service-processes and explain “Six Sigma Services” challenge ?
- (f) Explain the role of Master Black Belts, Black Belts and Green Belts in a six sigma organisation.
3. Attempt any *two* of the following questions :—
(10×2=20)
- (a) What is DMAIC ? Explain DMAIC Team Life Cycle Phases.
- (b) Explain DFSS methodologies and DFX.
- (c) Explain three basic approaches for implementing Six Sigma.
4. Attempt any *two* of the following questions :— (10×2=20)
- (a) What is Process Map and how it is created ?
- (b) What is hypothesis testing ? Write the procedure for testing hypothesis. A single-cavity moulding press has

been producing insulators with a mean impact strength of 5.15 Nm and with standard deviation of 0.25 Nm. A new lot shows the following data from 12 specimen :—

Specimen No.	Strength
1	5.02
2	4.87
3	4.95
4	4.88
5	5.01
6	4.93
7	4.91
8	5.09
9	4.96
10	4.89
11	5.06
12	4.85

Is the new lot from which the sample of 12 was taken different in mean impact strength from the past performance of the process, considering type-I error of 5%. Given z-score of -1.96 for proportion area of 0.0250 under normal distribution curve.

(c) What is QFD and FMEA ? How to perform FMEA ?

5. Attempt any *two* of the following questions :— (10×2=20)

- (a) How to sustain Six Sigma Improvement ?
- (b) What are the various softwares developed for Six Sigma ? Explain Minitab.
- (c) Explain various graphical analysis of minitab plots.