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

Paper ID : 140855   Roll No. ☐☐☐☐☐☐☐☐☐☐☐

B.TECH.

Theory Examination (Semester-VIII) 2015-16

SIX SIGMA METHODS & APPLICATIONS

Time : 3 Hours   *Max. Marks : 100*

Q1. Attempt all question   **(2×10=20)**

(a) What are the differences between 'services' and 'products'

(b) How do you visualize quality in the service sector?

(c) What is inferential statistics?

(d) Define median, range, standard deviation and kurtosis.

(e) Differentiate between Normal and Binomial distribution.

(f) What is histogram? How is it constructed?

(g) What is SIPOC?

(h) Explain sporadic condition and approach for handling sporadic problems.

(i) What do you mean by quality improvement?

(j) Explain the term RPN in FMEA.

Q2. Attempt any five   (5×10=50)

(a) Explain the role of Master Black Belts, Black Belts and Green Belts in a six sigma organisation.

(b) What is meant by defects? Explain how you will classify defects in qualitative measurements case. Also explain the importance of having 'sigma' as a metric in denoting performance of a product, service or system.

(c) Discuss the box-plot vis-a-vis a histogram. Can we call a Pareto chart a histogram ? Justify your answer.

(d) A battery manufacturer was considering changing suppliers for a particular part. The purchasing manager required that the average cost of the part be less than or equal to Rs 320 in order to stay within budget. A sample of the 32 initial deliveries had a Mean of the new product upgrade price of Rs 280 with an estimated Standard Deviation of Rs 30. Based on the data provided, compute the value of Z for the data assuming a Normal Distribution.

(e) What is DMAIC? Explain DMAIC Team Life Cycle Phases.

(f) How to sustain six sigma improvements?

(g) Introduce what is Project Charter? Define the role of Project Charter. Elaborate elements of Project Charter. What are the benefits of Project Charter?

(h) Elaborate organizational culture and quality practices in Six Sigma. Give a brief review of reinforcement and control procedures

Attempt any two   (2×15=30)

Q3. What are QFD (Quality function deployment) and 'Failure Modes & Effects Analysis' (FMEA)? How to perform FMEA?

Q4. 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

Q5. Explain three basic approaches for implementing six sigma.