
**THE
SIX SIGMA GREEN BELT
SOLUTIONS TEXT**

© 2014 by Bill Wortman - All rights reserved

SECTION II

SIX SIGMA GOALS - SAMPLE QUESTIONS

- 2.1. An organized and disciplined approach to problem solving in most six sigma organizations is called:
- a. SIPOC
 - b. DMAIC
 - c. PDCA
 - d. DPMO

Solution: This is a straight forward knowledge question. The only two problem solving approaches listed are DMAIC and PDCA. The tool most closely associated with six sigma is DMAIC (Define, Measure, Analyze, Improve and Control). Plan-do-check-act is another common team problem solving tool. SIPOC (Suppliers, Inputs, Process, Outputs, Customers) is a high level process flow map used in six sigma and DPMO is an acronym for defects per million opportunities.

Answer b is correct.

Reference: *CSSGB Primer*, Section II - 4 and 27/31.

- 2.2. Using six sigma methodology, a company at 4.5 sigma would have a failure rate of:
- a. 3.4 ppm
 - b. 233 ppm
 - c. 1350 ppm
 - d. 6210 ppm

Solution: The six sigma approach allows for a ± 1.5 sigma shift. Answer **b** represents the 5 sigma level and answer **d** is the 4 sigma level.

Answer c is correct.

Reference: *CSSGB Primer*, Section II - 3 and Section XII - 3.

- 2.3. From an upper management perspective, what has been the principal motivating factor in embracing six sigma?
- a. Bottom line results
 - b. Market share growth
 - c. Defect reductions
 - d. Customer focus

Solution: Phil Crosby once stated that upper management is interested in money, making money, and not losing money. He said there must be something else, but he never got that far in conversations with them. Answers **b**, **c**, and **d** could be considered to be subsets of answer **a**.

Answer a is correct.

Reference: *CSSGB Primer*, Section II - 4/5.

SECTION II

SIX SIGMA GOALS - SAMPLE QUESTIONS

- 2.4. An advantage of training managers in six sigma concepts before improvement team members is which of the following?
- Managers have more time available for training
 - Managers must lead the deployment of six sigma
 - Managers must understand the concepts better than the team members
 - Managers must pay for worker training

Solution: Managers normally have as much (or more) time pressure as other company employees. Thus, answer **a** is untrue. Managers must lead the effort, validate the training and understand the quality concepts. They don't necessarily need to understand the concepts better than team members. Answer **d** may be true but it fails to address the question.

Answer b is correct.

Reference: *CSSGB Primer*, Section II - 6/8.

- 2.5. In highly effective six sigma companies, most employees receive some training. What group is most likely to receive sponsorship training?
- Senior management
 - Master black belt candidates
 - Black belt candidates
 - Green belt candidates

Solution: Sponsorship training is normally given to upper management. Master black belt, black belt and green belt candidates receive more extensive technical instruction.

Answer a is correct.

Reference: *CSSGB Primer*, Section II - 7.

- 2.6. A company struggling with low performance in terms of quality, profitability, and productivity is considering a six sigma initiative. A decision to proceed would be considered:
- Smart, they have a lot of low lying fruit
 - Unwise, they probably can't afford the effort
 - Unwise, they need to attend to basic activities first
 - Smart, they obviously need the six sigma structure

Solution: Most authorities agree that the company in question should consider more fundamental building blocks first.

Answer c is correct.

Reference: *CSSGB Primer*, Section II - 32/34.

SECTION II

SIX SIGMA GOALS - SAMPLE QUESTIONS

- 2.7. One of Dr. Deming's 14 points for management states, "Cease dependence upon inspection as a way to achieve quality." The underlying tenet of this statement is which of the following?
- Many American companies employ too many inspectors; perhaps 5% - 10% of the work force
 - Quality should be built into the product, not inspected in
 - In most cases, the worker should perform his/her own inspection and not rely on someone else
 - Most manual inspection will miss 10% - 20% of defects under typical working conditions

Solution: This question requests the underlying tenet or real reason that inspection dependence should be minimized or eliminated. Answers **a**, **c**, and **d** are true statements in many circumstances. They explain or expand some of the weaknesses or facts present during product inspection. However, answer **b** explains the question best. If quality is built into the product, then it doesn't matter if inspection misses a defect. The defect isn't there. Inspection to improve quality is too late, ineffective, and costly. Harold F. Dodge said, "You cannot inspect quality into a product."

Answer b is correct.

References: *CSSGB Primer*, Section II - 14 and W. Edwards Deming, (1986). *Out of the Crisis*.

- 2.8. Which of the following quality luminaries would be most clearly identified as a proponent of improvement and breakthrough projects?
- Ishikawa
 - Deming
 - Juran
 - Crosby

Solution: Juran's Trilogy consists of three processes: quality planning, quality control, and quality improvement. The quality improvement phase would certainly be considered a project approach to improvement.

Answer c is correct.

Reference: *CSSGB Primer*, Section II - 21.

- 2.9. Identify the quality guru who believed the best approach to understanding the purpose of a quality system would be the four absolutes of quality management.
- Dr. Feigenbaum
 - Philip Crosby
 - Dr. Deming
 - Dr. Juran

Solution: The four absolutes of quality management are part of Philip Crosby's message.

Answer b is correct.

Reference: *CSSGB Primer*, Section II - 12.

SECTION II

SIX SIGMA GOALS - SAMPLE QUESTIONS

2.10. If one chose to look at any business enterprise on a main level basis, which of the following categories would be integrated into other KPIV and KPOV areas?

- a. Process
- b. Operations
- c. Business
- d. Technological

Solution: Although the variables themselves may differ, process, operations, and business levels have key input and output variables and are identified as such. A technological level is not separately identified. It is integrated into the major three categories.

Answer d is correct.

Reference: *CSSGB Primer*, Section II - 39/41.

2.11. Why has six sigma been so successful for many organizations?

- a. Bottom line results are enhanced
- b. A ± 1.5 sigma shift is included
- c. An undisciplined approach is used
- d. Sound statistical approaches are eliminated

Solution: The ± 1.5 sigma shift is only a small part of six sigma. Answer **b** is, thus, eliminated. The opposite of answers **c** and **d** is true.

Answer a is correct.

Reference: *CSSGB Primer*, Section II - 3/5. Snee, R.D. (1999, September). "Why Should Statisticians Pay Attention to Six Sigma?" Quality Progress.

2.12. Why is six sigma called TQM on steroids?

- a. Because of the extensive training element required
- b. Because of the inclusion of statistical and lean tools
- c. Because of the heavy impact of top management support
- d. Because of the impact of cost savings on the bottom line

Solution: The steroid quote comes from the inclusion of statistical items such as DOE, DFSS, statistical analysis, etc. and certain lean manufacturing tools.

Answer b is correct.

Reference: *CSSGB Primer*, Section II - 4.
