

Test Bank
to accompany

Six Sigma

**Basic Tools and
Techniques**

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10 9 8 7 6 5 4 3 2 1

ISBN 0-13-506453-8

Test Bank

Six Sigma: Basic Tools and Techniques

Chapter 1 Six Sigma Basics Test Questions

1. Describe the concept of Six Sigma.

Essentially, Six Sigma is about results, enhancing profitability through improved quality and efficiency. Improvement projects are chosen based on their ability to contribute to the bottom line on a company's income statement by being connected to the strategic objectives and goals of the corporation. Projects that do not directly tie to customer issues or financial results are often difficult to sell to management. When choosing a Six Sigma project or any improvement project, care should be taken to avoid poorly defined objectives or metrics. Key business metrics include revenue dollars, labor rates, fixed and variable unit costs, gross margin rates, operating margin rates, inventory costs, general and administrative expenses, cash flow, warranty costs, product liability costs and cost avoidance. Six Sigma projects are easy to identify, since the Six Sigma methodology seeks to reduce the variability present in processes, project teams seek out sources of waste, such as overtime and warranty claims, investigate production backlogs or areas in need of more capacity, and focus on customer and environmental issues. With high volume products even small improvements can produce significant impact on the financial statement.

2. Where did the Six Sigma methodology originate?

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3. What is a company trying to accomplish when they decide to follow the Six Sigma methodology?

Six Sigma programs lead to improved profitability, increased customer retention, reduced customer complaints and warranty claims, reduced costs through less waste, rework and so on, achieve a greater market share, increased employee involvement and satisfaction, lower employee turnover, an increased ability to attract new customers, improve their competitiveness and customer satisfaction, improved management-employee relations, improved focus on key goals, improved internal and external communication, and improved teamwork

4. Discuss why a company would wish to implement the Six Sigma methodology.

A company implementing the Six Sigma methodology would do so in order to: retain customers, increase profits, improve process performance, reduce variation present in processes, improve internal operations, quality, and productivity; and gain customers.

5. How does a Six Sigma Black Belt compare with a Certified Quality Engineer?

See Table 1.1 in text.

6. How does the Six Sigma methodology compare with quality improvement programs?

The most significant difference is Six Sigma's focus on the financial aspects of improvements. Improvement efforts must contribute to the organization's financial success. For other similarities and differences, see Table 1.2. Continuous improvement quality efforts define key processes, determine the owners of these processes, measure existing process performance, determine the gap between desired process performance and existing process performance, create performance measures which will be used to determine if the improvements made to the process are working, use quality improvement techniques to improve the process, review the process to see if the improvements are working. This is very similar to Six Sigma efforts.

7. What is meant by the term key process? Using a hotel as an example, describe two of their key processes.

Key processes are the business processes that have the greatest impact on customers' value perceptions about the product or service and the greatest impact on customer retention. Effective organizations concentrate system and process improvement efforts on those business processes will increase their competitiveness.

Check-in, Check-out, room service, bill preparation, cleaning of rooms

8. How can key processes be identified?

Study the organization from the customer's point-of-view. Identify those processes that have the greatest impact on the customers' value perceptions about the product or service and the greatest impact on customer retention.

9. Why would your company find it valuable to train you in Six Sigma concepts?

10. Who would you contact about becoming a certified quality engineer/technician or a certified green belt Six Sigma practitioner?

Chapter 2 Quality Masters Test Questions

1. Describe the key aspects of Feigenbaum's definition of quality.

A customer determination

Based on the customer's actual experience with the product or service

Measured against his or her requirements

Stated, unstated

Conscious or merely sensed

Technically operational or entirely subjective

Representing a moving target

2. Recently, a customer in a store purchased over \$100 worth of household cleaning supplies. As the clerk bagged the purchases, the customer noticed that the bags were flimsy and the items (laundry soap, detergent, cleanser, furniture polish, bleach, ammonia, etc.) were rather heavy. The customer requested that the items be separated into several different bags and double-bagged to avoid ripping the bags.

Though the store was not busy and no one else was waiting in line, instead of complying with the customer's request, the clerk hefted the bag in the air and said "it should hold up". The customer insisted, but the clerk refused to double-bag or provide more bags. As the customer left the store, several of the bags ripped. The customer ended up returning for bags and re-bagging the items without the aid of the clerk. The customer has decided not to patronize the store in the future. How does Feigenbaum's definition of quality apply here?

A customer determination (the bags are too flimsy for heavy products)

Based on the customer's actual experience with the product or service

(the bags broke, the clerk was not helpful)

Measured against his or her requirements

Stated (asked for double-bags, repacking), unstated (did not return)

Conscious (tried to get what was needed) or merely sense

(needed help from clerk)

Technically operational (the bags broke) or entirely subjective

Representing a moving target (did not return to store)

3. Describe a product or service that you have purchased recently. In terms of Feigenbaum's definition, was it a quality product or service? Why or why not?
4. Describe Shewhart's two types of variation. Give an example of each.

Controlled variation (common cause variation) refers to variation that is present in the process on a daily basis. It is the variation that is natural to the process. For instance, the temperature in a building varies slightly throughout the day and throughout a year.

Uncontrolled variation (special/assignable causes) is variation that comes from outside the process and acts on the process. For instance, the type of clothing a particular individual wears when working in the building.

5. Select one of Deming's fourteen points and discuss how it relates to creating a customer focus.

Could discuss:

Create a constancy of purpose (which focuses on the customer)

Adopt a new philosophy (of customer focus)

Constantly and forever improve (the organization's focus on customer, the organization's processes directly affecting the customer)

Institute training on the job (for employees who's work directly affects the customer, focused on customer)

Institute leadership (focusing on customer)

Break down barriers (making working with the company appear seamless to the customer)

6. What does Deming's first point 'create a constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business and to provide jobs' mean?

Dr. Deming's first point—*create a constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business and to provide jobs*—encourages leadership to accept the obligation to constantly improve the product or service through innovation, research, education, and continual improvement in all facets of the organization. A company is like an Olympic athlete who must constantly train, practice, learn, and improve in order to attain a gold medal. Lack of constancy of purpose is one of the deadly diseases Dr. Deming warns about in his writings. Without dedication, the performance of any task can not reach its best.

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Continually improve the process of doing business

Don't award based on price tag alone (cheap bags)

Training (poorly trained clerk, no customer service)

Break down barriers between departments (Is anyone telling purchasing that the customers are upset about the bags?)
Pride of workmanship (lousy bags that employees can't do anything about)

8. Which of Deming's Fourteen points are applicable here and why?
An employee is asked to prepare computer printouts for timely delivery. While the information is printing out, the paper keeps tearing and jamming in the printer. The employee knows that this particular brand of paper is incompatible with this printer. When he checked on this in the past he was told that the paper was the least costly, and since the company was facing a budget crunch, purchase orders were being filled with the least expensive items possible. Unfortunately, no one thought to check on what kind of impact those choices would have on the productivity in various departments. Because of jams and tears, the document preparer now has to work longer on the job than expected. More paper is also used because of the loss associated with the jams.

Don't award based on price tag alone (incompatible paper)
Break down barriers between departments (Is anyone telling purchasing about the productivity losses?)
Remove the barriers that rob the workers of pride of workmanship (can't get the job done efficiently or effectively)

9. Which of Deming's Fourteen points are applicable here and why?
John has just been hired as a color separator in a printing company. John is familiar with many types of separators, but each has its own processes that must be learned. The person doing the hiring assured John that a training program was in place. John's first day at work was a disaster. He was assigned to separator 3 and told to "run it". When he explained to the supervisor that he needed some training to get up to speed on the machine, the supervisor grudgingly asked another employee to spend 15 minutes with John. Wanting to get back to her own machine, the other employee gave a quick 5 minute run through and John was on his own. John made many mistakes that first night and production was lost. His supervisor thinks John won't make it through his probationary period.

Provide training
Provide education
Remove the barriers that rob works of pride of workmanship
Drive out fear

10. Describe Taguchi's Loss Function. What does it stand for?

The traditional approach to improvement and quality emphasizes conformance to requirements, usually a specification with +/- limits. The Taguchi Loss Function points out that any deviation from the target specification results in a loss.