- 77. Which of the following statements concerning control charts is true?
 - attribute charts require smaller sample sizes while variable charts require a. larger sample sizes
 - b. attribute charts require larger sample sizes while variable charts require smaller sizes
 - c. attribute charts and variable charts require equal sample sizes
 - d. attribute charts must always have sample sizes of 100 while variable charts can use sample size

(Medium)

- 78. Design specifications reflecting customer requirements for a product are known as
 - a. control limits
 - b. capability indices
 - c. natural variability
 - d. tolerances

(Easy)

- 79. The natural variation of a process relative to the variation allowed by the design specifications is known as
 - a. process capability
 - b. design tolerances
 - c. control limits
 - d. Six Sigma quality

(Easy)

a. If the natural variable to a process exceeds tolerances, the process cannot meet design specifications

- b. If the design specifications are less than (i.e., inside) the natural variability in the process the process can meet the specification limits.
- c. If the natural variability in a process exceeds tolerances, the process can meet design specifications
- d. none of the above

(Easy)

- 81. The ratio of the range of the design specifications to the range of the process variation is known as
 - a. Six Sigma quality
 - b. the process capability index
 - c. the process capability ratio
 - d. a p-chart

(Medium)

- 91. A company produces a product which is designed to last 2,000 hours with tolerances of ± 250 hours. The process that produces the product has a mean of 1,900 hours with a standard deviation of 100 hours. According to the process capability index for this process
 - a. the process mean is off center and defects will be produced
 - b. the process is capable of meeting design specifications
 - c. the process mean is centered on the design target
 - d. none of the above

(Hard)

- 92. A company manufactures a product that has a design (nominal) target width of 5 inches with tolerances of \pm .05 inch. The process that produces the product has a mean of 4.995 inches and a standard deviation of 0.01 inch. The process capability ratio for this process is
 - a. -1.67
 - b. -1.5
 - c. 1.5
 - d. 1.67

(Hard)

93. A company manufactures a product that has a design (1 coural) target width of 5 inches with tolerances of a 0.5 inches to 1. The second se inches with tolerances of \pm .05 inch. The produces the product has a mean of 4.995 inches and a standard eviation of 0.01 inch. The process capability index for this process is Page 9 of 1.67 d.

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(Hard)
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- 94. A company manufactures a product that has a design (nominal) target width of 5 inches with tolerances of +.05 inch. The process that produces the product has a mean of 4.995 inches and a standard deviation of 0.01 inch. According to the process capability ratio is the process capable of being within design specifications?
 - a. Yes, the capability ratio is greater than 1.0
 - b. No, the ratio is greater than 1.0
 - c. Yes, the ratio is less than 1.0
 - d. No, the ratio is less than 1.0

(Hard)

see if it is varying from what it is supposed to be doing. If there is unusual of undesirable variability, the process is corrected so that defects will not occur. In this way SPC is used to prevent poor quality before it occurs. IT is such an important part of quality management that nearly all workers at all levels in committed TOM companies are given extensive and continual training in SPC. U.S. companies that have been successful in adopting TQM train all their employees in SPC methods and make extensive use of SPC for continuous process improvement.

2. Briefly discuss attribute and variable quality measures.

The quality of a product or service can be evaluated using either an attribute of the product or service or a variable measure. An attribute is a product characteristic such as color, surface texture, or perhaps smell or taste. Attributes can be evaluated quickly with a discrete response such as good or bad, acceptable or unacceptable. or yes or no. Even if quality specifications are complex and extensive, a simple attribute test might be used to determine if a product or service is or is not defective. A variable measure is a product K characteristic that is measured on a continuous scare up has length, width, time, or temperature. Because 2 voi be evaluation is the result of a measurement it is source decredent to as a quantitative classification method. An include evaluation is sometimes referred to as a qualitative en splication, since the response is not measured. Previous and about the product that does an attribute. Because it is a measurement, a value bie typically provides more

- 3. How do we evaluate whether a process is in control using control charts?

Sample points are plotted on the control chart and the chart is examined to determine if the process is in control. Generally, a process will be considered to be in control if (a) there are no sample points outside the control limits, (b) most points are near the process average or center line, without too many close to the control limits, (c) approximately equal numbers of sample points occur above and below the center line, and (d) the points appear to be randomly distributed around the center line. If any of these conditions are violated, the process may be out of control.

4. What is a c-chart and when is it used?

A c-chart is a type of attribute control chart. A c-chart uses the actual number of defects per item in a sample. A c-chart is used when it is not possible to compute a proportion defective and the actual number of defects must then be used. For example, it is possible to count the number of blemishes on a painted surface but we cannot compute a proportion because the total number of possible blemishes is not