Implementing Quality Concepts

Part I. THEORIES

A. True or False

1. Productivity is measured by the quantity of good output generated from a specific amount of input during a time period.
2. Inspection of incoming inventory is a value-adding activity.
3. Storage of unneeded inventory is a non-value added item.
4. Quality control places the primary responsibility for product or service quality on the provider.
5. Grade refers to a product meeting the highest number of a customer's needs at the lowest possible cost.
6. Grade refers to one of many quality levels that a product or service has relative to the inclusion or exclusion of certain characteristics to satisfy customer needs.
7. Value refers to a product meeting the highest number of a customer's needs at the lowest possible cost.
8. Strategic benchmarking is industry specific in its approach.
9. Process benchmarking is concerned with how top-ranked companies achieve their results.
10. Results benchmarking creates the risk for a company to become stagnant.
11. Process benchmarking creates the risk for a company to become stagnant.
12. A total quality system should place an emphasis on inspection.
13. A total quality system should place an emphasis on prevention and continuous improvement
14. Total quality management requires that an organization analyze the costs and benefits of each of its customer segments.
15. When implementing TQM, an organization should establish long-term relationships with preferred suppliers.
16. When implementing TQM, an organization should establish long-term relationships with as many suppliers as possible.
17. Reworking a product is an appraisal cost.
18. Reworking a product is an internal failure cost.
19. Testing and adjusting manufacturing equipment is a prevention cost.
20. Testing and adjusting manufacturing equipment is an appraisal cost.
21. Replacing a product after it has been sold is an external failure cost.
22. Conducting a quality audit is an appraisal cost.
23. Conducting a quality audit is a prevention cost.
24. Pareto analysis is frequently used to aid management in deciding where to concentrate quality prevention cost dollars.
25. The balanced scorecard can be used to provide information on quality in an organization.

26. Total quality management (TQM) requires the commitment of all individuals within an organization.
27. ISO 9000 registration is required for regulated products sold in the United States.
28. ISO 9000 registration is required for regulated products sold in the European Union.

B. Multiple Choice

1. An all-inclusive definition of quality views it as the ability of products/services to
   a. only meet internal design specifications.
   b. meet the customer's stated or implied needs.
   c. be produced using all value-added production activities.
   d. be produced with no rework costs.

2. Which of the following is **false** as it relates to quality?
   a. Quality is the total of all characteristics of a product or service that impacts on its ability to meet the needs of a specific person.
   b. Quality must always be viewed from the user's perspective.
   c. Quality is never concerned with what the user thinks, feels, or deems important.
   d. The definition of quality has evolved through time and is more currently comprehensive than in the past.

3. Productivity is measured by the
   a. total quantity of output generated from a limited amount of input during a time period.
   b. quantity of good output generated from a specific amount of input during a time period.
   c. quantity of good output generated from the quantity of good input used during a time period.
   d. total quantity of input used to generate total quantity of output for a time period.

4. Which of the following can be used to indicate factors that slow down or cause unnecessary work in a process?
   a. activity analysis
   b. total quality management
   c. cost of quality
   d. all of the above

5. Which of the following are undesirable from a consumer perspective but are frequently needed?
   a. value-neutral activities
   b. value-added activities
   c. non-value-added activities
   d. none of the above

6. Which of the following would typically be viewed as non-value-added activities?

	Moving material	Inspecting raw material	Attaching product components	Storing finished goods
a.	yes	yes	yes	no
b.	no	no	no	yes
c.	no	yes	no	yes
d.	yes	yes	no	yes

7. _____ places the primary responsibility for quality on the maker or producer.
   a. Pareto analysis
   b. Quality control
   c. Benchmarking
   d. Activity analysis

8. All attempts to reduce variability and defects in products reflect the implementation of
   a. activity analysis.
   b. statistical process control.
   c. quality control.
   d. control charts.

9. Control charts are appropriate devices in
   a. total quality control.
   b. statistical process control.
   c. total quality management.
   d. all of the above.

10. A control chart graphs
    a. actual process results relative to a range of acceptable variation.
    b. expected process results relative to upper and lower control limits.
    c. actual process results relative to value-added and non-value-added activities.
    d. the cost of process malfunctions relative to the cost of reducing process variations.

11. The addition or removal of product or service characteristics to satisfy additional needs, especially price, reflect the _____ of a product or service.
    a. value
    b. grade
    c. quality
    d. durability

12. Value reflects the ability of a product to
    a. provide the best quality at any price.

b. have all possible product and service characteristics.
c. meet the majority of a customer's needs at the lowest possible price.
d. have the longest technical or service life and the best warranty.

13. Comparing the way a "best-in-class" company performs a specific activity (such as distribution) is called
    a. process benchmarking.
    b. results benchmarking.
    c. total quality management benchmarking.
    d. SPC benchmarking.

14. Benchmarking allows a company to
    a. identify its strengths and weaknesses.
    b. imitate those ideas that are readily transferable.
    c. improve on methods in use by others.
    d. all of the above.

15. Benchmarking against direct competitors creates the risk of
    a. creating products or services with identical specifications.
    b. becoming stagnant relative to process improvements.
    c. being taken over by the competitors to prevent a loss of ideas.
    d. all of the above.

16. Reverse engineering is used in
    a. statistical process control.
    b. process benchmarking.
    c. results benchmarking.
    d. price fixing.

17. Benchmarking against noncompetitors is extremely important in
    a. process benchmarking.
    b. results benchmarking.
    c. reverse engineering.
    d. all of the above.

18. Benchmarking

	identifies "best-in-class" companies	analyzes the "negative gap"
a.	yes	no
b.	no	yes
c.	yes	yes
d.	no	no

19. Benchmarking does which of the following activities relative to a "best-in-class" (BIC) company?

	Compares BIC's products and processes with own	Copies BIC's products and processes directly	Improves on BIC's products and processes
a.	yes	yes	yes
b.	yes	no	no
c.	no	no	yes
d.	yes	no	yes

20. Which of the following is **not** a step in benchmarking procedures?
    a. analyze the "positive gap"
    b. engage in continuous improvement
    c. analyze the "negative gap"
    d. identify "best-in-class" companies

21. Which of the following is **not** a critical element in a total quality management system?
    a. employee involvement
    b. activity-based costing
    c. continuous improvement
    d. problem prevention emphasis

22. A total quality system should be designed to promote a reorientation of thinking from an emphasis on
    a. internal quality improvements to an emphasis on external benchmarking.
    b. the planning process to an emphasis on the performance evaluation process.
    c. inspection to an emphasis on prevention.
    d. process benchmarking to an emphasis on results benchmarking.

23. Which of the following is the first element of knowledge needed by a company wanting to pursue total quality management?
    a. what the company's customers want
    b. who the company's customers are
    c. how the company's processes are designed
    d. what the components of the company's product are

24. Total quality management is inseparable from the concept of
    a. ISO certification.
    b. centralized organizational structure.
    c. continuous improvement.
    d. the product life cycle.

25. A company will **not** achieve world-class status unless a quality focus
    a. allows that company to achieve one or more major quality awards.
    b. becomes an integral part of the organization's culture.
    c. emphasizes the elimination of all quality costs for compliance and noncompliance.
    d. has been mandated by management for workers to pursue.

26. Which of the following statements is **true**?
    a. The more customers a company has, the better off the company is.
    b. A company should spare no expense to provide customer satisfaction.
    c. Most customers stop doing business with a company because of poor product or service quality.
    d. Cost-benefit analysis can help identify customers that cost more than they are worth to the company.

27. The four categories of product quality costs are
    a. external failure, internal failure, prevention, and carrying.
    b. external failure, internal failure, prevention, and appraisal.
    c. external failure, internal failure, training, and appraisal.
    d. warranty, product liability, training, and appraisal.

28. The number of product defects discovered by consumers is what kind of performance indicator?

	Qualitative	Quantitative	Financial	Nonfinancial
a.	yes	no	no	yes
b.	no	yes	no	yes
c.	no	yes	yes	no
d.	yes	no	no	yes

29. Money spent on employee training is a
    a. prevention cost.
    b. appraisal cost.
    c. empowerment cost.
    d. Pareto cost.

30. Production quality is affected by
    a. worker productivity.
    b. the amount of failure costs incurred.
    c. worker skill level.
    d. just-in-time suppliers.

31. Mistakes **not** eliminated by prevention costs may cause

	appraisal costs	failure costs
a.	no	no
b.	no	yes
c.	yes	no
d.	yes	yes

32. Product quality includes all of the following **except**
    a. appeal.
    b. performance.
    c. durability.
    d. price.

33. Recalls are fairly common events for automobile manufacturers. The costs of recalling and repairing a car create

	internal failure costs	external failure costs	prevention costs
a.	yes	yes	no
b.	yes	yes	yes
c.	no	yes	no
d.	yes	no	yes

34. An appraisal cost is created by
    a. installing automated technology.
    b. reworking products.
    c. verifying procedures.
    d. rescheduling and setup.

35. Compliance costs include

	prevention costs	appraisal costs	internal failure costs
a.	yes	no	no
b.	no	yes	yes
c.	yes	yes	no
d.	yes	yes	yes

36. Management can decide where to concentrate its quality prevention dollars using
    a. statistical process control charts.
    b. just-in-time inventory systems.
    c. a feedback loop.
    d. Pareto analysis.

37. Historically, the cost of quality has been
    a. included in account balances for items such as Work in Process Inventory and marketing expenses.
    b. detailed in various "cost of quality" account balances on the Income Statement.
    c. immaterial because no accounts were developed to detail these amounts.
    d. generally spent in the prevention rather than the appraisal category.

38. A significant cost of quality that is **not** recorded in the accounting records is the
    a. failure cost for a customer complaint center.
    b. cost of reworking products to bring them up to specification.
    c. opportunity costs of forgone future sales.
    d. appraisal cost for product equipment.

39. A cost of quality report compares current period quality costs in specified categories to
    a. last year's quality costs.
    b. current period budgeted quality costs.
    c. total quality costs for the period.
    d. both a and b.

40. Which of the following is **not** one of the three objectives of a quality program?
    a. Product quality should be consistent to always meet the purchaser's need(s).
    b. A quality program should give management confidence that the quality is and will be at a constant level.
    c. A quality program should give customers confidence that the intended quality will be achieved in products.
    d. Product quality should always vary because customers change their wants and needs over time.

41. The most visible embodiment of total quality management in the United States is
    a. being awarded the Deming Prize.
    b. achieving ISO 9000 certification.
    c. meeting industry standards.
    d. receiving the Baldrige Award.

42. Which of the following are categories judged for the Baldrige Award?

	Benchmarking	Business results	Use of SPC and Pareto analysis	Customer focus	Leadership
a.	no	yes	no	yes	yes
b.	yes	yes	yes	yes	yes
c.	yes	yes	no	yes	no
d.	no	no	no	no	no

43. The ISO 9000 series refers to
    a. international guidelines for quality standards.
    b. provisions regarding benchmarking activities in the European Union.
    c. guidelines for appropriate expenditures on the various categories of quality costs.
    d. all of the above.

44. The ISO 9000 standards
    a. indicate which companies' products are better than those of competitors.
    b. allow management to decide how to meet the standards for quality assurance.
    c. include specific directives about product design, material procurement, and environmental responsibilities.
    d. compose a program of quality assurance under which companies are registered by the International Organizational for Standardization.

45. A quality audit involves a review of

	manufacturing processes	cost of quality standards	quality documentation
a.	yes	yes	yes
b.	no	yes	yes
c.	no	no	no
d.	yes	no	yes

46. Registration under ISO 9000 is
    a. required for all companies doing business internationally.
    b. required for all European companies doing business in Europe.
    c. not required for U.S. companies unless they use European suppliers.
    d. required for all companies producing regulated products to be sold in the European Union.

Part II. PROBLEMS

Seating Concepts has just finished its first year of business. Seating Concepts makes decorative outdoor furniture. The firm manufactured 2,500 pieces of furniture during the year: 2,400 were sold at garden centers for $456,000; 100 pieces were defective and could only be sold as scrap metal (25 pounds each and can be sold for $2.50 per pound). No defective units could be reworked. During the year the following costs were incurred:

Total appraisal cost	$9,000
Total prevention cost	25,700
Total production cost	250,000
Total selling and administrative cost	70,000

1. **Compute the total profits lost by the company from selling scrap units during its first year of operations.**
2. **Compute the total quality cost incurred by the company during the first year of operations.**

Cokesbury Corporation is a manufacturer of electronic blood pressure monitors for home use. The following is a summary of quality costs for the first year of operations.

Total defective units	1,500
Number of units reworked	800
Number of customer units returned	200
Profit for a good unit	$50
Profit for a defective unit	$30
Cost to rework a defective unit	$12
Cost of a returned unit	$20
Total prevention cost	$17,500
Total appraisal cost	$9,500

3. **Compute the profit lost by selling defective units not reworked.**
4. **Compute the total rework cost.**
5. **Compute the cost of processing customer returns.**
6. **What is the total failure cost?**
7. **Determine the total quality cost.**

Variance Corporation is a manufacturer of a versatile statistical calculator. The following information is a summary of defective and returned units for the previous year.

Total defective units	1,000
Number of units reworked	750
Number of customer units returned	150
Profit for a good unit	$40
Profit for a defective unit	$25
Cost to rework a defective unit	$10
Cost of a returned unit	$15
Total prevention cost	$10,000
Total appraisal cost	$5,000

8. **The profit lost by selling defective units not reworked is?**
9. **The total rework cost is?**
10. **The cost of processing customer returns is?**
11. **The total failure cost is?**
12. **The total quality cost is?**

13. The profit lost by selling defective units to Greenstein Company totals $1,440. The total rework cost for 700 units is $28,000. The difference between the profit earned on a good unit and a defective unit is $12. **How many total defective units did Variance Corporation produce?**

14. Denison Company's cost of compliance is $58,000. Appraisal cost is $21,000 and failure cost is $32,000. **The company's total quality cost is?**

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Suggested Key	
I. Theories	
A. True or False	
1. T	15. T
2. F	16. F
3. T	17. F
4. T	18. T
5. F	19. T
6. T	20. F
7. T	21. T
8. F	22. T
9. T	23. F
10. T	24. T
11. F	25. T
12. F	26. T
13. T	27. F
14. T	28. T
B. Multiple Choice	
1. B	24. C
2. C	25. B
3. B	26. D
4. A	27. B
5. C	28. B
6. D	29. A
7. B	30. C
8. C	31. D
9. D	32. D
10. A	33. A
11. B	34. C
12. C	35. C
13. A	36. D
14. D	37. A
15. B	38. C
16. C	39. D
17. A	40. D
18. C	41. D
19. D	42. A
20. A	43. A
21. B	44. B
22. C	45. D
23. B	46. D

II.	**Problems**
1. $12,750	8. $3,750.
2. $47,450	9. $7,500.
3. $14,000	10. $2,250.
4. $9,600	11. $13,500.
5. $4,000	12. $28,500.
6. $27,600	13. 820 units
7. $54,600	14. $90,000.