

Multiple Choice Questions (Enter your answers on the enclosed answer sheet)

1. The service sector makes up approximately what percentage of all jobs in the United States?
 - a. 12%
 - b. 40%
 - c. 66%
 - d. 79%
 - e. 90%

2. Which is not true regarding differences between goods and services?
 - a. Tangible goods are generally produced and consumed simultaneously; services are not.
 - b. Most goods are common to many customers; services are often unique to the final customer.
 - c. Services tend to have a more inconsistent product definition than goods.
 - d. Services tend to have higher customer interaction than goods.
 - e. All of the above are true.

3. Which is not true regarding differences between goods and services?
 - a. Services are generally produced and consumed simultaneously; tangible goods are not.
 - b. Services tend to be more knowledge-based than goods.
 - c. Services tend to have a more inconsistent product definition than goods.
 - d. Goods tend to have higher customer interaction than services.
 - e. None of the above is true.

4. Which of the following services is least likely to be unique, i.e., customized to a particular individual's needs?
 - a. dental care
 - b. hairdressing
 - c. legal services
 - d. elementary education
 - e. computer consulting

5. Which of the following is not a typical service attribute?
 - a. intangible product
 - b. easy to store
 - c. customer interaction is high
 - d. simultaneous production and consumption
 - e. difficult to resell

6. Which of the following attributes is most typical of a service?
- a. production and consumption occur simultaneously
 - b. tangible
 - c. mass production
 - d. consistency
 - e. easy to automate
7. Experience differentiation _____.
- a. isolates the consumer from the delivery of a service
 - b. is an extension of product differentiation in the service sector
 - c. uses only the consumer's senses of vision and sound
 - d. keeps consumers from becoming active participants in the service
 - e. is the same as product differentiation, but applied in the service sector
8. Franz Colruyt has achieved low-cost leadership through _____.
- a. effective use of voice mail
 - b. plastic, not paper, shopping bags
 - c. background music that subtly encourages shoppers to buy more
 - d. converting factories, garages and theaters into retail outlets
 - e. exclusive use of the Euro
9. A firm producing a good is more likely to have which set of the following characteristics compared to a firm providing a service?
- a. many subjective quality standards, tangible product and locate away from customers
 - b. many subjective quality standards, intangible product and locate away from customers
 - c. many objective quality standards, tangible product and locate near customers
 - d. many objective quality standards, tangible product and locate away from customers
 - e. many objective quality standards, intangible product and locate away from customers
10. Which of the following influences layout design?
- a. inventory requirements
 - b. capacity needs
 - c. personnel levels
 - d. technology decisions
 - e. All of the above influence layout decisions.

11. The largest contributor to productivity increases is _____, estimated to be responsible for _____ of the annual increase.
- a. management; over one-half
 - b. Mr. Deming; one-half
 - c. labor; two-thirds
 - d. capital; 90%
 - e. technology; over one-half
12. Which of the following is not true when explaining why productivity tends to be lower in the service sector than in the manufacturing sector?
- a. Services are typically labor-intensive.
 - b. Services are often difficult to evaluate for quality.
 - c. Services are often an intellectual task performed by professionals.
 - d. Services are difficult to automate.
 - e. Service operations are typically capital intensive.
13. Three commonly used productivity variables are _____.
- a. quality, external elements and precise units of measure
 - b. labor, capital and management
 - c. technology, raw materials and labor
 - d. education, diet and social overhead
 - e. quality, efficiency and low cost
14. Firm A operates 10 hours each day, producing 100 parts/hour. If productivity were increased 20%, how many hours would the plant have to work to produce 1000 parts?
- a. less than 2 hours
 - b. between 9 and 10 hours
 - c. between 2 and 6 hours
 - d. between 6 and 8 hours
 - e. between 8 and 9 hours
15. A cleaning company uses 10 lbs each of chemicals A, B and C for each house it cleans. After some quality complaints, the company has decided to increase its use of chemical A by an additional 10 lbs for each house. By what % has productivity (houses per pound of chemical) fallen?
- a. 0%
 - b. 10%
 - c. 15%
 - d. 25%
 - e. 33%

16. Cost minimization is an appropriate strategy in which stage of the product life cycle?
- a. introduction
 - b. growth
 - c. adolescence
 - d. decline
 - e. retirement
17. Which of the following OM strategies/issues should a firm with a product in the maturity stage of its life cycle be least concerned with at the present time?
- a. increase capacity
 - b. long production runs
 - c. standardization
 - d. cost cutting
 - e. fewer rapid product changes
18. Which of the following is least likely to result in a strategy change?
- a. change in the company's financial situation
 - b. a company's adoption of new technology
 - c. change in the product life cycle
 - d. change in the competitive environment
 - e. change in job scheduling techniques
19. Which of the following is not an operations strategic decision?
- a. maintenance
 - b. price
 - c. layout design
 - d. quality
 - e. inventory
20. Which of the following statements regarding PERT times is true?
- a. The optimistic time estimate is an estimate of the minimum time an activity will require.
 - b. The optimistic time estimate is an estimate of the maximum time an activity will require.
 - c. The probable time estimate is calculated as $t = (a + 4m + b)$.
 - d. The pessimistic time estimate is an estimate of the minimum time an activity will require.
 - e. The most likely time estimate is an estimate of the maximum time an activity will require.

21. Which of the following statements regarding PERT times is true?
- a. The expected time is an estimate of the time an activity will require if everything goes as planned.
 - b. The optimistic time estimate is an estimate of the maximum time an activity will require.
 - c. The expected time estimate is calculated as $t = (a + 4m + b)/6$.
 - d. The pessimistic time estimate is an estimate of the minimum time an activity will require.
 - e. The most likely time estimate is an estimate of the maximum time an activity will require.
22. In a PERT network, non-critical activities that have little slack need to be monitored closely because _____.
- a. PERT treats all activities as equally important
 - b. near-critical paths could become critical paths with small delays in these activities
 - c. slack is undesirable and needs to be eliminated
 - d. they are causing the entire project to be delayed
 - e. they have a high risk of not being completed
23. Given an actual demand of 61, a previous forecast of 58, and an alpha of .3, what would the forecast for the next period be, using simple exponential smoothing?
- a. 45.5
 - b. 57.1
 - c. 58.9
 - d. 61.0
 - e. 65.5
24. Which of the following values of alpha would cause exponential smoothing to respond the most slowly to forecast errors?
- a. 0.10
 - b. 0.20
 - c. 0.40
 - d. 0.80
 - e. cannot be determined

25. A forecasting method has produced the following over the past five months. What is the mean absolute deviation?

Actual	Forecast	Error	Error
10	11	-1	1
8	10	-2	2
10	8	2	2
6	6	0	0
9	8	1	1

- a. -0.2
- b. -1.0
- c. 0.0
- d. 1.2
- e. 8.6

26. Given forecast errors of -1, 4, 8 and -3, what is the mean absolute deviation?

- a. 2
- b. 3
- c. 4
- d. 8
- e. 16

27. The last four months of sales were 8, 10, 15 and 9 units. The last four forecasts were 5, 6, 11 and 12 units. The Mean Absolute Deviation (MAD) is _____.

- a. 2
- b. -10
- c. 3.5
- d. 9
- e. 10.5

28. Value analysis takes place _____.

- a. when the product is selected and designed
- b. during the initial stages of production when something needs to be done to assure product success
- c. when the product is first conceived
- d. during the production process when it is clear the new product is a success
- e. when the product cost is very low

29. Which of the following makes products that are friendlier to the environment?
- a. using less materials
 - b. using more recycled materials
 - c. using less energy
 - d. using less harmful ingredients
 - e. All of the above.
30. One method used to determine a product's total environmental impact from conversion of inputs through production and to disposal is _____.
- a. QFD
 - b. design for manufacturability
 - c. environmental scanning
 - d. life cycle assessment
 - e. CAD
31. Products are more "environmentally friendly" when they are made _____.
- a. using cheaper materials
 - b. using less energy
 - c. according to OSHA standards
 - d. where environmental regulations are lax
 - e. more difficult to disassemble
32. An operations manager's ethical responsibilities _____.
- a. are limited to the production phase of product life cycle
 - b. are limited to following published laws and regulations
 - c. extend from design to production to final destruction/disposition of a product
 - d. do not include being efficient with the firm's resources
 - e. need not consider a product design's impact on the entire economy
33. Total quality management emphasizes _____.
- a. the responsibility of the quality control staff to identify and solve all quality-related problems
 - b. a commitment to quality that goes beyond internal company issues to suppliers and customers
 - c. a system where strong managers are the only decision makers
 - d. a process where mostly statisticians get involved
 - e. ISO 14000 certification

34. “Kaizen” is a Japanese term meaning _____.
- a. a foolproof mechanism
 - b. just-in-time (JIT)
 - c. a fishbone diagram
 - d. setting standards
 - e. continuous improvement
35. Which of the following statements regarding “Six Sigma” is true?
- a. The term has two distinct meanings—one is statistical, the other is a comprehensive quality system.
 - b. Six Sigma means that about 94 percent of a firm’s output is free of defects.
 - c. The Six Sigma program was developed by Toyota in the 1970s.
 - d. The Six Sigma program is for manufacturing firms and is not applicable to services.
 - e. Six Sigma certification is granted by the International Standards Organization (ISO).
36. Product focused processes _____.
- a. allow more customization, but are not very efficient
 - b. are desirable because resource needs increase slowly with the complexity of a process
 - c. are processes that are specialized for relatively few products or customer groups
 - d. apply only to service firms, not to manufacturers
 - e. are profitable because customers demand flexibility, not specialization
37. Value-stream mapping _____.
- a. is a variation on time function mapping
 - b. examines the supply chain to determine where value is added
 - c. extends time function mapping back to the supplier
 - d. starts with the customer and works backwards
 - e. All of the above are true.
38. One fundamental difference between a process chart and a process map is that _____.
- a. the process chart uses a time dimension while a process map is not time-oriented
 - b. the process chart includes the supply chain while the process map stays within an organization
 - c. the process chart is more like a table while the process map is more like a schematic diagram
 - d. the process chart focuses on the customer and on the provider’s interaction with the customer while the process map does not deal directly with the customer
 - e. None of these is true because a process chart and a process map are the same thing.

39. Service blueprinting _____.
- a. provides the basis to negotiate prices with suppliers
 - b. mimics the way people communicate
 - c. determines the best time for each step in the process
 - d. focuses on the provider's interaction with the customer
 - e. shows how Ishikawa techniques can be added to improve quality
40. A drawing of the movement of material, product or people is a _____.
- a. flow chart
 - b. process chart
 - c. service blueprint
 - d. process map
 - e. None of the above.
41. Which of the following statements regarding "proximity" in the location decision is false?
- a. Service organizations find that proximity to market is the most critical primary location factor.
 - b. Manufacturers want to be near customers when their product is bulky, heavy or fragile.
 - c. Perishability of raw materials is a good reason for manufacturers to locate near the supplier, not the customer.
 - d. Reduction in bulk is a good reason for a manufacturer to locate near the supplier.
 - e. Clustering among fast food chains occurs because they need to be near their labor supply.
42. Which of the following is the best example of the proximity rule that, for service firms, proximity to market is the most important location factor?
- a. Soft drinks are bottled in many local plants where carbonated water is added to proprietary syrups that may have been shipped long distances.
 - b. Few people will travel out-of-state for a haircut.
 - c. Patients will travel very long distances to have their hernia surgeries performed at Shouldice Hospital.
 - d. Furniture makers choose to locate near the source of good hardwoods even though it means locating near other furniture manufacturers.
 - e. Metal refiners (smelters) locate near mines to accomplish significant weight reduction near the metal's source.
43. Which of the following worker characteristics would likely be least important for U.S. firms looking to open up call centers in different countries?
- a. willing to accept low wages
 - b. have a high level of education
 - c. speak English
 - d. possess an in-depth knowledge of American popular culture
 - e. are young

44. Community attitudes, zoning restrictions and quality of labor force are likely to be considered in which of the following location decision methods?
- a. transportation method
 - b. locational break-even analysis
 - c. center-of-gravity method
 - d. simulation
 - e. factor-rating method
45. Which of the following methods best consider intangible costs related to a location decision?
- a. crossover methods
 - b. locational break-even analysis
 - c. factor-rating analysis
 - d. the transportation method
 - e. the assignment method
46. Evaluating location alternatives by comparing their composite (weighted-average) scores involves _____ analysis.
- a. factor-rating
 - b. cost-volume
 - c. transportation model
 - d. linear regression
 - e. crossover
47. Which of the statements below best describes office layout?
- a. groups workers, their equipment, and spaces/offices to provide for movement of information
 - b. addresses the layout requirements of large, bulky projects such as ships and buildings
 - c. seeks the best personnel and machine utilization in repetitive or continuous production
 - d. allocates shelf space and responds to customer behavior
 - e. deals with low-volume, high-variety production
48. Which of the following constitutes a major trend influencing office layouts?
- a. downsizing
 - b. globalization
 - c. environmental issues
 - d. off-site employees
 - e. health issues

49. Which of the following does not support the retail layout objective of maximizing customer exposure to products?
- a. locate high-draw items around the periphery of the store
 - b. use prominent locations for high-impulse and high-margin items
 - c. maximize exposure to expensive items
 - d. use end-aisle locations
 - e. convey the store's mission with the careful positioning of the lead-off department
50. Ambient conditions, spatial layout and functionality, signs, symbols and artifacts are all _____.
- a. indicators of imbalance on an assembly line
 - b. indicators that cross-docking has been successful
 - c. elements of customization in a warehouse layout
 - d. elements of servicescapes
 - e. elements of successful office layouts
51. Balancing low-cost storage with low-cost material handling is important in a(n) _____.
- a. fixed-position layout
 - b. process-oriented layout
 - c. office layout
 - d. repetitive and product-oriented layout
 - e. warehouse layout
52. Which of the following requires an information system that provides inbound product identification, its destination and routing of the product to the designated outbound vehicle?
- a. phantom-docking
 - b. random stocking
 - c. ASRS
 - d. customizing
 - e. cross-docking
53. Which of the following best describes Vizio's supply chain?
- a. few suppliers
 - b. keiretsu
 - c. joint venture
 - d. vertical integration
 - e. virtual company

54. Local optimization is a supply-chain complication best described as _____.
a. optimizing one's local area without full knowledge of organizational needs
b. obtaining very high production efficiency in a decentralized supply chain
c. the prerequisite of global optimization
d. the result of supply chains built on suppliers with compatible corporate cultures
e. the opposite of the bullwhip effect
55. The “bullwhip” effect _____.
a. occurs as orders are relayed from retailers to wholesalers
b. results in increasing fluctuations at each step of the sequence
c. increases the costs associated with inventory in the supply chain
d. occurs because of distortions in information in the supply chain
e. All of the above.
56. A restaurant runs a special promotion on lobster and plans to sell twice as many lobsters as usual. When this large order is sent to the distributor, the distributor assumes the large size is a trend, not a one-time event. The distributor therefore places an even larger order with the lobsterman. This is the result of _____.
a. double marginalization
b. the bullwhip effect
c. CPFR
d. a pass-through facility
e. vendor-managed inventory
57. Giving quantity discounts based on annual volume instead of single order size helps to control which supply-chain issue?
a. control risk
b. environmental risk
c. the bullwhip effect
d. unethical supplier behavior
e. vendor-managed inventory
58. Which of the following is not an opportunity for effective management in the supply chain?
a. accurate “pull” data
b. vendor-managed inventory
c. postponement
d. local optimization
e. channel assembly

59. Which of the following statements regarding the production order quantity model is true?
- a. It applies only to items produced in the firm's own production departments.
 - b. It relaxes the assumption that all the order quantity is received at one time.
 - c. It relaxes the assumption that the demand rate is constant.
 - d. It minimizes the total production costs.
 - e. It minimizes inventory.
60. The assumptions of the production order quantity model are met in a situation where annual demand is 3,650 units, setup cost is \$50, holding cost is \$12 per unit per year, the daily demand rate is 10 and the daily production rate is 100. The production order quantity for this problem is approximately _____.
- a. 139
 - b. 174
 - c. 184
 - d. 365
 - e. 548
61. A production order quantity problem has daily demand rate = 10 and daily production rate = 50. The production order quantity for this problem is approximately 612 units. The average inventory for this problem is approximately _____.
- a. 61
 - b. 245
 - c. 300
 - d. 306
 - e. 490
62. Which category of inventory holding costs is much higher than average for rapid-change industries such as PCs and cell phones?
- a. housing costs
 - b. material handling costs
 - c. labor costs
 - d. parts costs
 - e. pilferage, scrap and obsolescence
63. When quantity discounts are allowed, the cost-minimizing order quantity _____.
- a. is always an EOQ quantity
 - b. minimizes the sum of holding and ordering costs
 - c. minimizes the unit purchase price
 - d. may be a quantity below that at which one qualifies for that price
 - e. minimizes the sum of holding, ordering and product costs

64. In level scheduling, what is kept uniform from month to month?
- a. product mix
 - b. inventory levels
 - c. production/workforce levels
 - d. demand levels
 - e. sub-contracting levels
65. Which of the following is not consistent with a pure level strategy?
- a. varying the use of subcontracting
 - b. finding alternative work for employees during low-demand periods
 - c. using built-up inventory to meet demand requirements
 - d. varying production levels and/or work force to meet demand requirements
 - e. All of the above are inconsistent with the pure level strategy.
66. Which of the following is not an advantage of level scheduling?
- a. stable employment
 - b. lower absenteeism
 - c. matching production exactly with sales
 - d. lower turnover
 - e. more employee commitment
67. A firm uses the pure chase strategy of aggregate planning. It produced 1,000 units in the last period. Demand in the next period is estimated at 800 and demand over the next six periods (its aggregate planning horizon) is estimated to average 900 units. In following the chase strategy, the firm will _____.
- a. add 100 units to inventory in the next period
 - b. add 200 units to inventory in the next period
 - c. hire workers to match the 100 unit difference
 - d. lay off workers to match the 200 unit difference
 - e. implement a lower price point to increase demand
68. A firm's demand in the next four quarters (its aggregate planning horizon) is forecast to be 80, 50, 40 and 90 units. Last quarter, the firm produced 60 units. If it uses level scheduling, the firm will _____.
- a. hire workers to permit production of 65 units per quarter for the next four quarters
 - b. hire 20 workers
 - c. have an increase in inventory of 20 units in the next quarter
 - d. have a decrease in inventory of 5 units in the next quarter
 - e. change its workforce each quarter so that inventory does not change

69. It is week 1 and there are currently 20 A's in stock. The MPS calls for 300 A's at the start of week 5. If there are scheduled receipts planned for week 3 and week 4 of 120 A's each and A has a lead time of 1 week, when and how large of an order should be placed to meet the requirement of 300 A's?
- a. Week 1, 300 A's
 - b. Week 1, 40 A's
 - c. Week 5, 40 A's
 - d. Week 4, 40 A's
 - e. Week 4, 300 A's
70. A material requirements plan contains information with regard to all of the following EXCEPT _____.
- a. quantities and required delivery dates of all subassemblies
 - b. quantities and required delivery dates of final products
 - c. the capacity needed to provide the projected output rate
 - d. inventory on hand for each final product
 - e. inventory on hand for each subassembly
71. Each R requires 2 of component S and 1 of part T. The lead time for assembly of R is 3 days. The lead time for the manufacture of S is 5 days. The lead time for the manufacture of T is 10 days. The cumulative lead time for R is _____ days.
- a. 6
 - b. 9
 - c. 13
 - d. 17
 - e. cannot be determined
72. A method of input-output control that uses a system of cards to limit the amount of work at a work center and also to control lead time and monitor backlog is _____.
- a. the assignment method
 - b. backward scheduling
 - c. forward scheduling
 - d. constant work-in-process or ConWIP
 - e. level material use
73. If an assignment problem consists of 6 workers and 7 projects, _____.
- a. one worker will not get a project assignment
 - b. one worker will be assigned two projects
 - c. each worker will contribute work toward the seventh project
 - d. one project will not get a worker assigned
 - e. The problem cannot be solved by assignment method.

74. In MRP, the number of units projected to be available at the beginning of each time period refers to _____.
- a. net requirements
 - b. scheduled receipts
 - c. the projected usage of the item
 - d. the amount projected to be on hand
 - e. the amount necessary to cover a shortage
75. Linking a part requirement with the parent component that caused the requirement is referred to as _____.
- a. net requirements planning
 - b. a time fence
 - c. pegging
 - d. kanban
 - e. leveling
76. In MRP, system nervousness is caused by _____.
- a. management's attempt to continually respond to minor changes in production requirements
 - b. the use of the lot-for-lot approach
 - c. management's marking part of the master production schedule as "not to be rescheduled"
 - d. the use of phantom bills of material
 - e. management's attempt to evaluate alternative plans before making a decision
77. One of the tools that is particularly useful in reducing the system nervousness in the MRP system is/are _____.
- a. modular bills
 - b. time phasing
 - c. time fences
 - d. lot sizing
 - e. closed loop system
78. Which of the following is a step towards integrating JIT and MRP according to the text?
- a. smaller buckets
 - b. increase quality
 - c. scrap MRP, it does not work with JIT
 - d. migrate from MRP to ERP
 - e. All of the above are acceptable steps.

79. Material requirements plans specify _____.
- a. the quantities of the product families that need to be produced
 - b. the quantity and timing of planned order releases
 - c. the capacity needed to provide the projected output rate
 - d. the costs associated with alternative plans
 - e. whether one should use phantom bills of material or not
80. Which of the following best differentiates material requirements planning (MRP) from finite capacity scheduling (FCS)?
- a. FCS recognizes the finite nature of capacity while MRP does not.
 - b. FCS works in services while MRP does not.
 - c. MRP requires time buckets while FCS does not.
 - d. FCS is an input into traditional MRP systems.
 - e. FCS uses the Wagner-Whitin algorithm while MRP uses lot-for-lot and EOQ.
81. If an assignment problem consists of 5 workers and 4 projects, _____.
- a. one worker will not get a project assignment
 - b. one project will be assigned two workers
 - c. the fifth worker will split time among the four projects
 - d. one project will not get a worker assigned
 - e. The problem cannot be solved by assignment method.
82. Which of the following dispatching rules tends to minimize job flow time?
- a. FCFS: first come, first served
 - b. SPT: shortest processing time
 - c. EDD: earliest due date
 - d. LPT: longest processing time
 - e. FCLS: first come, last served
83. Average completion time for a schedule sequence at a work center is the ratio of _____.
- a. total processing time to the number of jobs
 - b. total flow time to total processing time
 - c. total flow time to the number of jobs
 - d. total processing time plus total late time to the number of jobs
 - e. total flow time plus total late time to the number of jobs

84. Factory X is trying to use level use scheduling. If their first target were to cut the current lot size in half, by what proportion must setup cost change?
- a. Setup cost must be cut to one fourth its current value.
 - b. Setup cost must also be cut in half from its current value.
 - c. Setup cost must double from its current value.
 - d. cannot be determined
 - e. None of the above.
85. Which one of the following statements is true about the kanban system?
- a. The quantities in the containers are usually large to reduce setup costs.
 - b. It is associated with a push system.
 - c. It is useful to smooth operations when numerous quality problems occur.
 - d. The supplier workstation signals the customer workstation as soon as a batch is completed.
 - e. The customer workstation signals to the supplier workstation when production is needed.
86. Kanban is associated with all of the following EXCEPT _____.
- a. small lot sizes
 - b. signals such as cards, lights or flags
 - c. moving inventory only as needed
 - d. increased material handling
 - e. reductions in inventory
87. The priority rule that sequences jobs using the smallest ratio of due date from today to processing time is _____.
- a. critical ratio
 - b. earliest due date
 - c. first come, first served
 - d. longest processing time
 - e. shortest processing time
88. Which of the following is an advantage of the FCFS dispatching rule when used in services?
- a. FCFS is easy to update.
 - b. FCFS minimizes the average number of jobs in the system.
 - c. FCFS minimizes the average lateness of all jobs.
 - d. FCFS maximizes the number of jobs completed on time.
 - e. FCFS seems fair to customers.

89. The most appropriate sequencing rule to use if the goal is to dynamically track the progress of jobs and establish relative priority on a common basis is _____.
- a. shortest processing time
 - b. earliest due date
 - c. critical ratio
 - d. longest processing time
 - e. Johnson's rule
90. A characteristic of JIT partnerships with respect to quality is to _____.
- a. help suppliers meet quality requirement
 - b. inspect all incoming parts
 - c. maintain a steady output rate
 - d. impose maximum product specifications on the supplier
 - e. draw up strict contracts ensuring that all defectives will be immediately replaced
91. Which of the following is not a goal of JIT partnerships?
- a. removal of unnecessary activities
 - b. removal of in-plant inventory
 - c. removal of in-transit inventory
 - d. obtain improved quality and reliability
 - e. All of the above are goals of JIT partnerships.
92. Which one of the following is a concern expressed by suppliers?
- a. having too many customers
 - b. delivery to the point of use
 - c. having limited ability to respond to changes in product and quality
 - d. large lot sizes
 - e. customers' infrequent engineering changes
93. Reduction of in-transit inventory can be encouraged through use of _____.
- a. supplier location near plants
 - b. low setup costs
 - c. low carrying costs
 - d. use of trains, not trucks
 - e. low-cost, global suppliers

94. In JIT partnerships, suppliers have several concerns. Which of the following is not such a concern?
- a. desire for diversification
 - b. poor customer scheduling
 - c. small lot sizes
 - d. producing high enough quality levels
 - e. customers' infrequent engineering changes
95. The word "kanban" means _____.
- a. low inventory
 - b. employee empowerment
 - c. card
 - d. continuous improvement
 - e. lot size of one
96. Infant mortality in electronics follows which kind of distribution?
- a. normal
 - b. negative exponential
 - c. exponential
 - d. random
 - e. one-sided normal distribution
97. Suppose that the introduction of a preventive maintenance program is deemed cost effective. Which of the following is most likely true if the cost to actually perform preventive maintenance is very expensive?
- a. high standard deviation in MTBF
 - b. low standard deviation in MTBF
 - c. low cost to repair
 - d. repairs carry little non-monetary consequences
 - e. the system never fails
98. As far as maintenance costs are concerned, _____.
- a. for low levels of maintenance commitment, breakdown maintenance costs exceed preventive maintenance costs
 - b. for low levels of maintenance commitment, preventive maintenance costs exceed breakdown maintenance costs
 - c. for high levels of maintenance commitment, breakdown maintenance costs exceed preventive maintenance costs
 - d. preventive maintenance is always more economical than breakdown maintenance
 - e. breakdown maintenance is always more economical than preventive maintenance when the "full cost of breakdowns" is taken into consideration

99. For a machine to be a good candidate for preventive maintenance, _____.
- a. the consequences of failure must exceed the cost of preventive maintenance and the MTBF distribution must have a large standard deviation
 - b. the consequences of failure must exceed the cost of preventive maintenance and the MTBF must be relatively low
 - c. the consequences of failure must exceed the cost of preventive maintenance and the MTBF distribution must have a relatively low standard deviation
 - d. the consequences of failure must exceed the cost of preventive maintenance and the MTBF must be relatively high
 - e. the consequences of failure must be relatively unknown and, therefore, risky
100. Which one of the following is not necessary to identify the optimal maintenance policy?
- a. historical data on maintenance costs
 - b. cost of performing the analysis
 - c. breakdown probabilities
 - d. breakdown occurrences
 - e. repair times