

## Practice Quiz Questions

### Chapter 1

1. Operations management deals with
  - a. making the stuff
  - b. selling the stuff
  - c. raising capital
  - d. the creation and delivery of goods and/or services
  - e. Both a and d.
2. A supply chain
  - a. is two or more parties linked by a flow of resources
  - b. is frequently global in scope
  - c. only applies to products that are sold to the end consumer
  - d. Both a and b
  - e. Both a and c
3. Supply chain management
  - a. is not related to logistics management
  - b. involves the management of activities surrounding the flow of raw materials to the finished product or service enjoyed by end customers, and back, in the case of recycling or returns
  - c. as a defined area of responsibility has only existed since the mid-1900's
  - d. is separate (i.e., no overlap) from the functional areas of finance, marketing, and operations
  - e. Both b and c
4. The term supply chain management
  - a. was coined by consultants at Booz-Allen & Hamilton in the 1980's
  - b. was introduced to draw attention to the changing role of the logistics manager
  - c. was introduced to draw attention to the need for a perspective that recognizes the strategic importance of logistics and an integrated system-wide outlook when improving logistics processes
  - d. Both b and c
  - e. All of the above.
5. To say SCM is important because of dollars means that
  - a. it is expensive to change how supply chains are managed
  - b. SCM focuses on the movement of money in international trade
  - c. a lot of money is spent on SCM activities
  - d. the cost of capital is higher for well developed supply chains
  - e. Both a and d

## Chapter 2

1. ERP systems
  - a. have existed since the early 1900's
  - b. are used to plan, control, and record the day-to-day transactions of running a business
  - c. provide real-time access to information in a consistent manner throughout the organization
  - d. are relatively easy to implement
  - e. Both b and c
2. SCA systems
  - a. are frequently linked to ERP systems
  - b. stands for supply chain aggregation systems
  - c. are divided into four categories of software
  - d. focus on transaction processing such as order entry and billing
  - e. Both a and d
3. SRM software
  - a. is a category of ERP software
  - b. stands for supply and resource management software
  - c. is used to help analyze and manage the buy side of the business
  - d. Both a and b
  - e. Both b and c
4. CRM software
  - a. is a category of ERP software
  - b. stands for customer relationship management software
  - c. is used to help analyze and manage the sell side of the business
  - d. Both a and b
  - e. Both b and c
5. A digital representation of an enterprise
  - a. refers to the database containing available resources and prescriptions that describe how resources are used to create products and services
  - b. is an element of an ERP system
  - c. contains information on past, present, and projections into the future
  - d. plays an important role in e-commerce
  - e. All of the above

## Chapter 3

### 1. System slack

- a. is not necessary in supply chains and should be eliminated
- b. is a consequence of factors that are outside of management's control
- c. is idle, underutilized, or non-value adding resources
- d. does not exist in most supply chains
- e. Both a and d

### 2. Quantity uncertainty

- a. stems from six sources
- b. includes output uncertainty, which refers to the timing and number of outputs from a process
- c. is illustrated by a buyer who orders 100 units and receives 100 units
- d. is one cause of system slack
- e. Both b and d

### 3. Time lags

- a. contribute to system slack because of conflicting objectives across departments or firms
- b. contribute to system slack because of Little's law
- c. contribute to system slack because of the trumpet of doom
- d. Both b and c
- e. All of the above

### 4. TQM

- a. stands for timeliness and quality of management
- b. is an organization-wide effort directed towards the continuous improvement of quality
- c. relies on information technology
- d. was introduced in the early 1900's
- e. Both b and c

### 5. JIT

- a. was initially developed and implemented at Toyota
- b. has evolved over time and has been adapted in a wide range of sectors
- c. is commonly known in industry today as lean
- d. Both b and c
- e. All of the above

## Chapter 4

1. Order processing
  - a. is important because it is an area of high customer contact
  - b. is generally unaffected by advances in information technology
  - c. is unrelated to order fulfillment
  - d. is unrelated to demand management
  - e. Both c and d
2. An early warning mechanism
  - a. is used to speed up the order processing function
  - b. does not require commitment from customers
  - c. is illustrated by a discount that is offered to customers who place advance orders
  - d. is unrelated to influencing demand
  - e. Both b and c
3. The law of large numbers
  - a. explains why the tactic of part standardization can add value
  - b. explains why the tactic of postponement of form or place can add value
  - c. explains why the tactic of time lag reduction can add value
  - d. Both a and b
  - e. All of the above
4. What is the forecast for the next period according to the 4-period moving method given that shipments during the last 7 periods from oldest to most recent were 215, 301, 214, 380, 292, 409, 268?
  - a. 268.0
  - b. 277.5
  - c. 297.0
  - d. 301.8
  - e. 337.3
5. What is the forecast for the next period according to the basic exponential moving method given that demand in the period that just ended was 268, the most recent smoothed estimate of the mean is 305.5, and the smoothing parameter is  $\alpha = 0.3$ ?
  - a. 268.0
  - b. 279.3
  - c. 294.3
  - d. 301.8
  - e. 305.5

## Chapter 5

### 1. XML

- a. is designed to replace HTML
- b. is relevant for computer to computer communication over the Internet
- c. is a language that tells your computer how to display information on your computer screen
- d. Both b and c
- e. All of the above

### 2. A reverse auction

- a. has multiple potential sellers and one buyer
- b. can be conducted over the Internet
- c. is more likely to benefit the buyer when there are many potential sellers
- d. related to a principle of nature called the winner's curse
- e. All of the above.

### 3. A contract

- a. with a fixed price is more complicated and difficult to administer than the alternative of a cost plus fixed fee contract
- b. with a fixed price has more risk (from the buyer's perspective) due to cost uncertainty than the alternative of a cost plus fixed fee contract
- c. without a buyback clause has more risk (from the buyer's perspective) due to demand uncertainty than the alternative with a buyback clause
- d. with a fixed price incentive clause shares the risk due to demand uncertainty between buyer and seller
- e. Both c and d

### 4. The Robinson-Patman Act

- a. requires that retailers charge the consumer the same price for the same product
- b. helps protect retail stores with less purchasing power from price discrimination
- c. regulates the use of reverse auctions
- d. Both b and c
- e. All of the above

### 5. BATNA

- a. stands for best attainment through novel applications
- b. is a tactic designed to reduce the chance of unpleasant surprises discovered after a contract has been signed
- c. is a tactic that can help save the buyer from making undue concessions to reach a settlement
- d. is why some companies have policies that restrict buyers from accepting gifts from sellers
- e. Both b and c

## Chapter 6

1. A form of inventory is
  - a. cycle stock, which is inventory undergoing transformation in either place or form
  - b. speculative stock, which is inventory to protect against uncertainty
  - c. safety stock, which is excess inventory acquired prior to an anticipated price increase
  - d. All of the above
  - e. None of the above
2. A cost of holding inventory is
  - a. capital costs, such as the cost to finance the inventory investment
  - b. inventory risk costs, such as the cost damaged product
  - c. inventory service cost, such as insurance
  - d. All of the above
  - e. None of the above
3. If the demand rate is 105,000 units per year and 15,000 units are ordered at a time, then the number of orders placed per year is
  - a. less than once
  - b. 1.7
  - c. 7.0
  - d. 7.4
  - e. 52.1
4. Suppose that the demand rate is 12,000 units per year, the transaction cost associated with placing an order is \$100, the annual holding cost rate is 25% of product value, and each unit costs \$50. If 12 orders are placed per year, then the average annual transaction cost plus cycle stock holding cost is
  - a. \$621
  - b. \$1,200
  - c. \$1,325
  - d. \$6,350
  - e. \$7,450
5. Suppose that the demand rate is 12,000 units per year, the transaction cost associated with placing an order is \$100, the annual holding cost rate is 25% of product value, each unit costs \$50, and the shortage cost rate is 8 times larger than the holding cost rate. The optimal number of units on backorder when a replenishment shipment arrives is
  - a. 0
  - b. 52
  - c. 111
  - d. 413
  - e. 465

## Chapter 7

1. The single period model
  - a. is relevant when demand is deterministic
  - b. captures the trade-off between the cost of ordering too much and the cost of ordering too little
  - c. is a generalization of the economic order quantity model from Chapter 6
  - d. sets the optimal service level as the ratio of short cost rate to the sum of shortage and excess cost rates
  - e. Both b and d
2. Marginal analysis
  - a. can be used to determine the formula for the optimal service level for the single period model
  - b. in the context of the single period model compares the increase in expected excess cost with the decrease in expected shortage cost when the order quantity is increased
  - c. can be used to determine the formula for the optimal service level for a base stock policy
  - d. Both a and b
  - e. All of the above
3. A base stock policy
  - a. is reasonable when the fixed cost of placing an order is high and demand occurs frequently
  - b. answers the questions of when and how much to order by ordering the demand amount whenever demand occurs
  - c. results in a base stock level that is continually changing
  - d. is designed to protect against uncertainty in demand during the selling season
  - e. All of the above
4. Fill rate
  - a. is the same as service level
  - b. is a measure of profitability
  - c. is the probability that there will be no backorders during the replenishment leadtime
  - d. can be increased by increasing inventory, but each percentage point increase requires an increasing incremental investment in inventory
  - e. Both a and c
5. Suppose that for a  $(Q, R)$  policy with  $Q = 200$  and  $R = 50$ , the average number of units backordered when a replenishment shipment arrives is 9.7. This means that the fill rate is
  - a. 4.9%
  - b. 9.7%
  - c. 80.6%
  - d. 90.3%
  - e. 95.2%

## Chapter 8

1. Deterministic capacity analysis
  - a. is one of six basic options for assessing capacity requirements
  - b. assumes that the demand rate is constant
  - c. assumes that the service rate is uncertain
  - d. predicts that 4 servers are needed when service time is 4 minutes and customers arrive at a rate of 40 per hour
  - e. is more accurate than queueing models and computer simulation
2. The  $M/M/1$  model
  - a. assumes deterministic service times
  - b. assumes exponential inter-arrival times
  - c. assumes a multiple servers
  - d. has formulas that illustrate the curse of utilization
  - e. Both b and d
3. Suppose there are two servers, the average service time is two minutes, and average arrival rate is 40 per hour. The system utilization is
  - a. 5%
  - b. 10%
  - c. 67%
  - d. 75%
  - e. 80%
4. Other things being equal, if variance
  - a. in service time is reduced, then average waiting time increases
  - b. in inter-arrival time is increased, then average waiting time increases
  - c. in service time is reduced, then system utilization decreases
  - d. Both b and c
  - e. Both a and c
5. The graph of individual utility from Prospect theory
  - a. shows individuals to be more sensitive to gains than losses
  - b. illustrates the principle of nature: law of large numbers
  - c. illustrates the principle of nature: Khintchine limit theorem
  - d. illustrates the principle of nature: satisfaction = perception - expectation
  - e. Both a and d.



## Chapter 9

1. Regarding the four basic types of production systems,
  - a. ETO stands for engineer-to-order
  - b. MTO means that product is produced in response to a specific customer order from purchased components
  - c. MTS is popular for high volume standardized product with relatively stable
  - d. ATO occupies the middle ground between the extremes of MTS and MTO
  - e. All of the above
2. A pull approach to answer the questions of when and how much to produce
  - a. is an apt characterization of the kanban system
  - b. is proactive—projected inventory (or equivalently, projected demand) combined with projected leadtimes are used to signal when to order or make product
  - c. is simpler than a push production system
  - d. is an apt characterization of the POLCA system
  - e. Both a and c
3. MRP
  - a. includes as one of its inputs, the master production schedule
  - b. stands for material requirements planning
  - c. includes as one of its inputs, the bill of material
  - d. Both a and c
  - e. All of the above
4. POLCA
  - a. stands for production with on-line cells and automation
  - b. is suitable for products with stable demand
  - c. uses cards to pull work through the cells
  - d. cards are the same as kanban cards
  - e. cards signal that material is needed
5. The sequencing rule
  - a. WSPT is used when fairness is a chief concern
  - b. SPT works by ordering jobs from smallest-to-largest processing time
  - c. LS can be used to quickly determine whether there exists a sequence where everything can be completed on time
  - d. EDD maximizes the fill rate
  - e. All of the above

## Chapter 10

1. Regarding transportation modes,
  - a. LTL stands for less-than-truckload
  - b. rail is a good option when short leadtimes are important
  - c. a main advantage of air relative to cargo ship for international freight is low cost
  - d. Both a and b
  - e. All of the above
2. The class of a product
  - a. plays a major role in the pricing of truckload shipments
  - b. is determined by such factors as density, value, stowability and handling, and susceptibility to damage
  - c. that is the maximum value (i.e., class 500) is the least expensive class to ship
  - d. is not relevant when negotiating freight prices
  - e. Both a and b
3. Regarding other services and service providers,
  - a. transportation brokers specialize in consolidating small shipments from various shippers into a large shipment
  - b. freight forwarders coordinate and manage the transportation requirements for a shipper through such services as carrier selection, rate negotiation, document preparation, shipment tracing, and bill processing
  - c. diversion refers to changing the consignee, sometimes after the shipment has reached its original destination
  - d. detention and demurrage costs are incurred when *free time* is exceeded
  - e. All of the above
4. Stop-offs
  - a. mean that a shipment is loaded and/or unloaded at various points between origin and destination
  - b. is always offered as an option by carriers
  - c. are used in *milk runs*
  - d. are more likely to save money when stop-offs occur closer to the origin than the final destination
  - e. Both a and c
5. The number of warehouses in a distribution network
  - a. is influenced by a trade-off between economies of scale in warehouse operation and transportation costs
  - b. should increase as outbound transportation cost rates increase
  - c. should increase as demand increases
  - d. Both a and c
  - e. All of the above

## Chapter 11

1. Control charts
  - a. are designed to separate good parts from bad parts
  - b. draw on probability theory, and more specifically, hypothesis testing
  - c. take advantage of the fact that humans are good at detecting patterns in images
  - d. are plots of process capability indices
  - e. Both b and c
2. An  $\bar{X}$ -chart
  - a. is a plot of sample variances
  - b. is used to detect changes in the process that affect the process mean
  - c. with a sample statistic that lies outside the control limits is an indicator that the process is in-control
  - d. is used for attribute data
  - e. Both a and d
3. The range of the sample—120.1, 124.7, 115.9, 114.0, 111.7, 122.2—is
  - a. 0
  - b. 5.0
  - c. 13.0
  - d. 118.1
  - e. 124.7
4. Regarding measures of process capability,
  - a. if process capability index with a value larger than 1 indicates that the process is capable of producing within specifications more than 99.7% of the time
  - b. the  $C_{pk}$  process capability index is more meaningful when the process mean is not centered within the specifications
  - c.  $C_p$  and  $C_{pk}$  are measures for how effectively the outputs of a process satisfy market requirements
  - d. Both a and c
  - e. All of the above
5. Six sigma
  - a. is relevant for the service sector and the manufacturing sector
  - b. is not related to TQM
  - c. is a quality improvement initiative that instills an attitude and expertise for reducing variability and waste and increasing consistency in outputs
  - d. Both a and c
  - e. Both a and b

## Chapter 12

1. The process – product matrix
  - a. classifies processes according to degree of cleanliness
  - b. classifies products according to cost
  - c. is a framework for detecting misalignment between the business strategy and the supply chain metrics/processes
  - d. Both b and c
  - e. All of the above
2. The supply chain – product matrix
  - a. classifies products according to predictability of demand
  - b. classifies the supply chain according to industry
  - c. indicates that a responsive supply chain should be matched with functional products
  - d. indicates that an efficient supply chain should be matched with innovative products
  - e. Both a and d
3. Regarding the characteristics of a responsive supply chain,
  - a. the primary purpose is to respond quickly to unpredictable demand in order to minimize stockouts, forced markdowns, and obsolete inventory
  - b. excess buffer capacity is maintained rather than striving for high utilization
  - c. suppliers are selected primarily for speed, flexibility, and quality rather than cost and quality
  - d. products are designed to be modular rather than to maximize performance and minimize cost
  - e. All of the above
4. SCOR
  - a. stands for supply chain order and replenishment
  - b. is part of the supply chain – product matrix
  - c. specifies a framework for describing supply chain processes with associated terminology, metrics, and best practices
  - d. Both a and b
  - e. Both a and c
5. Regarding causes of system slack and principles of nature,
  - a. the longer the time lags, the greater the uncertainty due to the trumpet of doom.
  - b. quantity uncertainty contributes to long flowtimes and congestion due to the curse of variability
  - c. cross-training reduces quantity uncertainty, and consequently flowtimes and congestion, due to the law of large numbers
  - d. time lags contribute to the bullwhip effect in supply chains
  - e. All of the above