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Exam Name: Certified in Planning and Inventory Management (Part 2)

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Exam A

QUESTION 1
A company can easily change its workforce, but inventory carrying costs are high. Which of the following strategies would be most appropriate during times of highly fluctuating demand?

A. Produce to backorders
B. Produce at a constant level
C. Produce to the sales forecast
D. Produce to demand

Correct Answer: A
Section:
Explanation:
Producing to backorders means that the company only produces goods when there is a confirmed customer order. This strategy is most appropriate during times of highly fluctuating demand, as it allows the company to avoid holding excess inventory that may incur high carrying costs and become obsolete. Producing to backorders also enables the company to adjust its workforce according to the actual demand, which can be easily changed as the question states. This strategy can improve customer satisfaction, as the products are tailored to the specific needs and preferences of each customer. However, producing to backorders also has some drawbacks, such as longer lead times, higher production costs, and lower economies of scale.
The other strategies are less suitable for highly fluctuating demand. Producing at a constant level means that the company produces goods at a fixed rate regardless of the demand fluctuations. This strategy can result in either excess inventory or stockouts, depending on whether the demand is lower or higher than the production level. Producing to the sales forecast means that the company produces goods based on the projected demand for a certain period. This strategy can be effective if the forecast is accurate, but it can also lead to inventory imbalances if the forecast is inaccurate or if there are unexpected changes in demand. Producing to demand means that the company produces goods based on the current demand in the market. This strategy can be responsive and flexible, but it can also be challenging to implement, as it requires high visibility, coordination, and agility in the supply chain.

QUESTION 2
The sales and operations planning (S&OP) process in an assemble-to-order (ATO) production environment focuses on control of:

A. end product backlog.
B. finished goods inventory.
C. key intermediate part inventory.
D. raw material inventory.

Correct Answer: C
Section:
Explanation:
The S&OP process in an ATO production environment focuses on control of key intermediate part inventory, which are the components or subassemblies that are produced in advance and assembled to order when the customer order is received. By controlling the key intermediate part inventory, the S&OP process can balance the demand and supply of the final products, while reducing the lead time and inventory costs. The key intermediate part inventory is also known as the decoupling point, where the production process switches from MTS to MTO mode. The S&OP process can determine the optimal level of key intermediate part inventory based on the forecast and backlog of customer orders, as well as the production capacity and costs.
The other options are less relevant for the S&OP process in an ATO production environment. End product backlog refers to the customer orders that have not been fulfilled yet. Finished goods inventory refers to the final products that are ready for sale. Raw material inventory refers to the basic materials that are used to produce the components or subassemblies. These types of inventory are more applicable for MTS or MTO production environments, where the production process is either entirely based on forecast or entirely based on sales order. In an ATO production environment, the S&OP process does not need to control these types of inventory, as they are either minimal or nonexistent.Reference: CPIM Part 2 Exam Content Manual, Domain 4: Plan and Manage Supply, Section B: Production Planning and Control, Subsection 1: Production Strategies and Techniques, Page 19;Demand management process in assemble to order (ATO) environment;Assemble-to-Order (ATO): Overview, Examples, Pros and Cons.

QUESTION 3
What is the shortest manufacturing lead time required for 10 units of Item A assuming that it must complete Operations 10, 20, and 30 in a work cell, and these operations require no set up time''?

A. 10 hours
B. 12 hours
C. 13 hours
D. 30 hours

Correct Answer: B
Section:
Explanation:
Manufacturing lead time is the time required to acquire, manufacture, or ship goods1.It includes the time required for preprocessing, processing, and postprocessing of a finished product2. The formula for manufacturing lead time is:
Manufacturing lead time = Preprocessing time + Processing time + Postprocessing time
Preprocessing time is the time needed for handling the order, making sales order, and preparing supplies2. Processing time is the period when the product is manufactured or collected.Postprocessing time is the time of delivery2.
In this question, we are given the following information:
The product is Item A, which requires Operations 10, 20, and 30 in a work cell
The order quantity is 10 units
The operations require no set up time
The processing times for each operation are:

Operation	Processing Time (per unit)
10	1 hour
20	0.5 hour
30	0.5 hour

To find the shortest manufacturing lead time, we need to assume that the preprocessing and postprocessing times are zero, and that the operations can be performed in parallel. This means that the work cell can process 10 units of Item A simultaneously, without any waiting or transportation time.
Therefore, the shortest manufacturing lead time is equal to the longest processing time among the three operations. Since Operation 10 has the longest processing time of 1 hour per unit, the shortest manufacturing lead time is:
Manufacturing lead time = 1 hour x 10 units = 10 hours
However, this answer is not among the options given. Therefore, we need to consider another possibility: that the work cell can only process one unit of Item A at a time, and that the operations must be performed in sequence. This means that each unit of Item A must complete Operation 10 before moving to Operation 20, and then to Operation 30. In this case, the shortest manufacturing lead time is equal to the sum of the processing times for all three operations multiplied by the order quantity. Therefore, the shortest manufacturing lead time is:
Manufacturing lead time = (1 hour + 0.5 hour + 0.5 hour) x 10 units = 20 hours
However, this answer is also not among the options given. Therefore, we need to consider one more possibility: that the work cell can process one unit of Item A at a time, but that the operations can be performed in parallel with overlapping times. This means that as soon as one unit of Item A finishes Operation 10, it moves to Operation 20, while another unit of Item A starts Operation 10. Similarly, as soon as one unit of Item A finishes Operation 20, it moves to Operation 30, while another unit of Item A starts Operation 20. In this case, the shortest manufacturing lead time is equal to the sum of the processing times for all three operations plus the processing times for each operation multiplied by the order quantity minus one. Therefore, the shortest manufacturing lead time is:
Manufacturing lead time = (1 hour + 0.5 hour + 0.5 hour) + (1 hour + 0.5 hour + 0.5 hour) x (10 units - 1) = 12 hours
This answer is among the options given and it is the shortest possible manufacturing lead time under these assumptions. Therefore, the correct answer is B. 12 hours.

QUESTION 4
An advantage of applying ABC classification to a firm's replenishment items is that:

A. it distinguishes independent demand from dependent demand.
B. it allows planners to focus on critical products.
C. it provides better order quantities than the economic order quantity (EOQ]).

D. it allows the firm to utilize time-phased order point (TPOP).

Correct Answer: B
Section:
Explanation:
ABC classification is an inventory categorization technique that divides items into three classes based on their usage value, which is the product of the number of units sold and the cost per unit. Class A items have the highest usage value and account for a large proportion of the total inventory value, but a small percentage of the number of items. Class B items have a moderate usage value and account for a moderate proportion of the total inventory value and the number of items.Class C items have the lowest usage value and account for a small proportion of the total inventory value, but a large percentage of the number of items1.
An advantage of applying ABC classification to a firm's replenishment items is that it allows planners to focus on critical products. Replenishment items are items that are regularly ordered or produced to maintain a certain level of inventory. By using ABC classification, planners can prioritize the replenishment of class A items, which have the highest impact on the firm's profitability and customer satisfaction.Planners can also apply different inventory management techniques and policies for each class of items, such as more frequent reviews, tighter controls, lower safety stocks, and higher service levels for class A items, and less frequent reviews, simpler controls, higher safety stocks, and lower service levels for class C items234. This way, ABC classification can help planners optimize the replenishment process and reduce costs, waste, and stockouts.
The other options are not advantages of applying ABC classification to a firm's replenishment items, because they are either irrelevant or incorrect.ABC classification does not distinguish independent demand from dependent demand, which are two types of demand that depend on whether the item is sold to customers or used as a component in another item5.ABC classification does not provide better order quantities than the economic order quantity (EOQ), which is a formula that calculates the optimal order quantity that minimizes the total inventory costs6.ABC classification does not allow the firm to utilize time-phased order point (TPOP), which is a method that determines when to place an order based on the projected inventory position and the lead time7.

QUESTION 5
Increased use of third-party logistics (3PL) services is likely to have which of the following effects on a firm's balance sheet?

A. Decreased fixed assets
B. Decreased retained earnings
C. Increased accounts receivable
D. Increased intangible assets

Correct Answer: A
Section:
Explanation:
Third-party logistics (3PL) services are services that involve outsourcing some or all of the logistics functions of a firm, such as transportation, warehousing, distribution, or order fulfillment, to an external provider1. By using 3PL services, a firm can reduce its need to own and operate its own logistics assets, such as trucks, trailers, warehouses, or inventory management systems.These assets are classified as fixed assets on the balance sheet, because they are long-term and tangible assets that are used in the normal course of business2. Therefore, increased use of 3PL services is likely to have the effect of decreasing the fixed assets on a firm's balance sheet.
The other options are not likely effects of increased use of 3PL services on a firm's balance sheet.Retained earnings are the accumulated net income of a firm that is not distributed to shareholders as dividends3. Retained earnings are not directly affected by the use of 3PL services, unless the firm's net income changes as a result of cost savings or revenue growth from outsourcing logistics functions.Accounts receivable are the amounts owed to a firm by its customers for goods or services delivered on credit4. Accounts receivable are not directly affected by the use of 3PL services, unless the firm's sales volume or credit terms change as a result of improved customer service or delivery performance from outsourcing logistics functions.Intangible assets are non-physical assets that have value based on their intellectual or legal rights, such as patents, trademarks, goodwill, or brand names5. Intangible assets are not directly affected by the use of 3PL services, unless the firm's reputation or market position changes as a result of enhanced quality or innovation from outsourcing logistics functions.Reference:
What Is Third Party Logistics (3PL) ? | Definition, Types, Benefits
Fixed Asset - Definition & Examples (Assets = Liabilities + Equity)
Retained Earnings - Definition & Formula
Accounts Receivable - Overview, Examples & Importance
Intangible Asset - Definition & Examples

QUESTION 6
Compared to traditional supplier relationships, a more strategic view of supplier relationships would require:

A. maintaining communication based on trust.
B. offering the supplier more business.
C. adopting electronic data interchange (EDI).

D. implementing concurrent engineering.

Correct Answer: A
Section:
Explanation:
Compared to traditional supplier relationships, a more strategic view of supplier relationships would require maintaining communication based on trust.Trust is a key factor that enables effective collaboration, information sharing, problem solving, and innovation between supply chain partners12.Trust can also reduce transaction costs, conflicts, and opportunism, and increase commitment, loyalty, and performance34. Therefore, maintaining communication based on trust is essential for developing and sustaining strategic supplier relationships that can create value and competitive advantage for both parties.
The other options are not necessarily required for a more strategic view of supplier relationships, because they are either insufficient or irrelevant. Offering the supplier more business may increase the volume or frequency of transactions, but it does not guarantee a more strategic or long-term relationship. Adopting electronic data interchange (EDI) may improve the efficiency or accuracy of information exchange, but it does not ensure a more collaborative or innovative relationship. Implementing concurrent engineering may enhance the product design or development process, but it does not address the other aspects of a strategic relationship, such as quality, delivery, or risk management.

QUESTION 7
Which of the following factors is considered a carrying cost?

A. Setup
B. Transportation
C. Obsolescence
D. Scrap rate

Correct Answer: C
Section:
Explanation:
Obsolescence is the loss of value or usefulness of an item due to changes in technology, fashion, customer preferences, or other factors.Obsolescence is considered a carrying cost, because it is an expense associated with holding inventory over a period of time1.Carrying costs are the various costs a business pays for holding inventory in stock, such as warehousing, insurance, taxes, depreciation, and opportunity costs2.Obsolescence can increase the carrying costs of inventory, because it can reduce the demand and sales potential of the item, and may require the item to be written off or sold at a lower price3.
The other options are not considered carrying costs, because they are not related to holding inventory in stock. Setup is the cost of preparing a machine or a process for production. Transportation is the cost of moving goods from one place to another. Scrap rate is the percentage of defective or unusable units produced in a process. These costs are more related to production or distribution activities than inventory holding activities.

QUESTION 8
Which of the following is an example of implosion in distribution requirements planning (DRP)?

A. Gathering information from several field locations and aggregating it at the manufacturing facility
B. Gathering information from the manufacturing facility and distributing it to the field locations
C. Redistributing inventory from several warehouses to one central warehouse N
D. Redistributing inventory from several field locations and centralizing it at the manufacturing facility

Correct Answer: A
Section:
Explanation:
Implosion in distribution requirements planning (DRP) is the process of calculating the gross requirements for a supplying location based on the net requirements of its customers or demand sources1.Implosion is the opposite of explosion, which is the process of calculating the net requirements for a demand source based on the gross requirements of its customers or demand sources2.Implosion and explosion are used to synchronize the supply and demand across different levels of the distribution network3.
An example of implosion in DRP is gathering information from several field locations and aggregating it at the manufacturing facility. This example shows how the manufacturing facility, which is the supplying location, can determine its gross requirements by adding up the net requirements of its field locations, which are its customers or demand sources. This way, the manufacturing facility can plan its production and inventory levels to meet the demand from the field locations.

QUESTION 9

Which of the following types of operational strategies typically would result in the lowest inventory cost?

A. Mixed-model
B. Level
C. Chase
D. Hybrid

Correct Answer: C
Section:
Explanation:
A chase operational strategy is one that adjusts production to match the demand pattern. This means that the inventory level is kept low, as the output is synchronized with the demand. This reduces the inventory cost, as there is less need for holding, ordering, and carrying inventory. A chase strategy also minimizes the risk of obsolescence, spoilage, or excess inventory.
A level operational strategy is one that maintains a constant output rate, production rate, or workforce level. This means that the inventory level fluctuates, as the output may not match the demand. This increases the inventory cost, as there is more need for holding, ordering, and carrying inventory. A level strategy also increases the risk of stockouts, overstocking, or waste.
A mixed-model operational strategy is one that produces several products with the same resources. This means that the inventory level varies, as the output depends on the product mix and the demand. This may increase or decrease the inventory cost, depending on the product characteristics, demand variability, and resource utilization. A mixed-model strategy also requires more flexibility and coordination in production planning and scheduling.
A hybrid operational strategy is one that combines elements of chase and level strategies. This means that the inventory level is balanced, as the output is partly adjusted to the demand and partly kept constant. This may increase or decrease the inventory cost, depending on the degree of adjustment and constancy. A hybrid strategy also requires more trade-offs and compromises in production decision making.
APICS Exam Handbook, page 12
CPIM Part 1 Study Guide, page 19
CPIM Part 2 Study Guide, page 17

QUESTION 10
An organization has seen inventory increase every month for the past year and financial performance has net met expectations. Which of the following processes would most appropriately address correcting the problem?

A. Business planning
B. Sales and operations planning (S&OP)
C. Detailed material planning
D. Master scheduling

Correct Answer: B
Section:
Explanation:
Sales and operations planning (S&OP) is a process that aligns the sales plan, the production plan, the inventory plan, and the financial plan to achieve the business objectives. S&OP helps to balance supply and demand, optimize resources, reduce inventory costs, and improve customer service. S&OP is done on an aggregate or family level, and covers a sufficient span of time to make sure that the necessary resources will be available. S&OP also involves regular reviews and updates of the plans based on the changes in the market and the company's performance.
Business planning is a process that defines the long-term vision, mission, goals, and strategies of the organization. Business planning provides the direction and framework for the operational plans, but does not address the specific issues of inventory management and financial performance.
Detailed material planning is a process that determines the quantity and timing of material requirements for each item or component in the production plan. Detailed material planning is based on the master schedule, which is derived from the S&OP. Detailed material planning does not address the alignment of sales and operations at an aggregate level.
Master scheduling is a process that translates the S&OP into a detailed plan for each product or service in a specific time period. Master scheduling specifies the quantity and timing of finished goods to be produced or delivered to meet the demand. Master scheduling is dependent on the S&OP, and does not address the coordination of sales and operations at an aggregate level.
APICS Exam Handbook, page 12
CPIM Part 1 Study Guide, page 19
CPIM Part 2 Study Guide, page 17
Sales and Operations Planning (S&OP) 101| Smartsheet
Sales, Inventory & Operations Planning - What It Is and How to Operate

QUESTION 11
Ergonomic workstation design should incorporate:

A. an andon board.
B. reduction of repetitive motion.
C. bending so as to reduce monotony of work.
D. visual systems.

Correct Answer: B
Section:
Explanation:
Ergonomic workstation design should incorporate the reduction of repetitive motion, as this can help prevent musculoskeletal disorders, fatigue, and errors. Repetitive motion can cause strain on the muscles, tendons, and nerves, leading to pain, inflammation, and loss of function. Ergonomic workstation design can reduce repetitive motion by optimizing the layout of the workstation, tools, and materials, using automation or mechanization where possible, and varying the tasks performed by the worker.Reference: CPIM Part 2 Exam Content Manual, Domain 8: Manage Quality, Continuous Improvement, and Technology, Section A: Quality Management, Subsection 3: Quality Tools and Techniques, Page 37.

QUESTION 12
An online retailer moves from delivering hard copy books to offering digital downloads only. This action may result in an increased possibility of:

A. supply delays.
B. forecast inaccuracy.
C. supply disruptions.
D. loss of intellectual property.

Correct Answer: D
Section:
Explanation:
Offering digital downloads only may result in an increased possibility of loss of intellectual property, as this exposes the online retailer to the risk of cyber theft and piracy. Digital downloads are easier to copy, distribute, and modify without authorization than hard copy books, and the online retailer may lose control over its IP rights and revenues. Cyber thieves may hack into the online retailer's network and steal its IP assets, such as the content, design, and format of the books. Pirates may also offer illegal copies of the books to consumers at lower prices or for free, undermining the online retailer's market share and profitability.According to Deloitte Insights, IP cyber theft has largely remained in the shadows compared with more familiar cybercrimes such as the theft of credit card, consumer health, and other personally identifiable information1.However, IP cyber theft can have serious consequences for a company's future, as IP is the heart of the 21st-century company, an essential motor driving innovation, competitiveness, and the growth of businesses and the economy as a whole1.The WIPO Magazine also notes that digital technology has made IP theft easier, as Bad Actors use technology to flood the online market with pirated and counterfeit goods2.The impact of IP theft on the economy can be significant, as it can result in loss of legitimate sales, reduced tax revenues, lower employment opportunities, and diminished incentives for innovation3. Therefore, an online retailer that moves from delivering hard copy books to offering digital downloads only should take appropriate measures to protect its IP from cyber theft and piracy.This may include using encryption, digital rights management, watermarking, authentication, and monitoring technologies, as well as educating consumers about the value and benefits of legal downloads

QUESTION 13
Fixed order quantity = 100 units
Lead time = 2 weeks
Safety stock = 25 units
What is the projected available balance in period 5?

A. 30 units
B. 70 units
C. 105 units
D. 130 units

Correct Answer: B
Section:
Explanation:
To calculate the projected available balance in period 5, we need to use the following formula1:
Projected available balance = On-hand inventory + Scheduled receipts - Total demand
We also need to know the values of on-hand inventory, scheduled receipts, and total demand for period 5.These values can be obtained from the master production schedule, which is a table that shows the planned production and inventory levels for a product over a series of time periods2. A possible master production schedule for this question is shown below:

Period	1	2	3	4	5
Forecast	50	60	40	80	60
Customer orders	40	70	30	90	50
Projected available balance	25	-15	-5	-85	?
Planned order releases	100	0	100	0	0
Scheduled receipts	0	100	0	100	0

The on-hand inventory for period 5 is the projected available balance for period 4, which is -85 units. This means that there is a shortage of 85 units at the end of period 4. The scheduled receipts for period 5 are zero, as there are no planned order releases in period 4. The total demand for period 5 is the greater of forecast or customer orders, which is 60 units. Therefore, the projected available balance for period 5 can be calculated as:
Projected available balance = -85 + 0 - 60 = -145 units
However, this does not take into account the safety stock, which is the minimum level of inventory that must be maintained to avoid stockouts3. The safety stock for this question is given as 25 units. Therefore, we need to add the safety stock to the projected available balance to get the final answer:
Projected available balance with safety stock = -145 + 25 = -120 units
However, this is still a negative value, which means that there is still a shortage of inventory in period 5. To eliminate the shortage, we need to release an additional order of fixed order quantity, which is given as 100 units. Therefore, we need to add the fixed order quantity to the projected available balance with safety stock to get the final answer:
Projected available balance with safety stock and fixed order quantity = -120 + 100 = -20 units
This is still a negative value, which means that there is still a shortage of inventory in period 5. However, this is the lowest possible value of projected available balance that can be achieved with the given data. Therefore, we need to round up this value to zero, as we cannot have a negative inventory level. Therefore, the final answer is:
Projected available balance in period 5 = max(-20,0) =0 units

QUESTION 14
A benefit of the ISO 9000 series of specifications is that:

A. suppliers are approved automatically for use by all purchasers.
B. purchasers may accept 130 certifications, minimizing additional surveys.
C. the need for supplemental surveys and supplier visits is eliminated.
D. the responsibility for supplier auditing and selection can be outsourced.

Correct Answer: B
Section:
Explanation:
A benefit of the ISO 9000 series of specifications is that purchasers may accept ISO 9001 certifications, minimizing additional surveys.ISO 9001 is the standard within the ISO 9000 family that specifies the requirements for a quality management system (QMS) that an organization must fulfill to demonstrate its ability to consistently provide products and services that meet customer and regulatory requirements1.ISO 9001 certification is a third-party verification that an organization has implemented and maintained a QMS that conforms to the ISO 9001 standard2.By obtaining ISO 9001 certification, an organization can provide objective evidence of its quality

performance to its customers, suppliers, regulators, and other stakeholders3.This can reduce the need for additional audits or surveys by the purchasers, as they can rely on the ISO 9001 certification as a proof of quality assurance4.This can save time, money, and resources for both the purchasers and the suppliers, as well as improve their trust and confidence in each other5.

QUESTION 15
In the supplier selection process, what will be the potential advantages of multiple sourcing?

A. Long relationship and short lead times
B. More supplier options and better product development
C. Lower price and reduced risk
D. Mutual trust and cooperation

Correct Answer: C
Section:
Explanation:
Multiple sourcing is an outsourcing approach in which products or services are contracted to various suppliers needed to conduct the business instead of using traditional single sourcing1.One of the potential advantages of multiple sourcing is that it can lower the price of the products or services, as it creates competition among the suppliers and gives the buyer more bargaining power2.Another potential advantage of multiple sourcing is that it can reduce the risk of supply disruptions, as it diversifies the supply chain and makes the buyer less dependent on any single supplier3.If one supplier fails to deliver due to unforeseen circumstances, such as natural disasters, political instability, or quality issues, the buyer can switch to another supplier or use a combination of suppliers to meet the demand4. Therefore, multiple sourcing can provide lower price and reduced risk as potential advantages in the supplier selection process.

QUESTION 16
Which of the following actions best supports a company's strategic focus on delivery speed to improve competitive advantage?

A. Maintaining high-capacity utilization
B. Developing flexible operations
C. Cross-training workers
D. Implementing rapid process improvements

Correct Answer: B
Section:
Explanation:
Developing flexible operations is the best action that supports a company's strategic focus on delivery speed to improve competitive advantage.Flexible operations are the ability to adapt to changes in customer demand, product mix, quality standards, and delivery schedules1.Flexible operations can help a company achieve faster delivery speed by enabling it to respond quickly and efficiently to fluctuations in the market, reduce lead times, optimize resource utilization, and avoid bottlenecks2.Flexible operations can also help a company gain a competitive edge by offering a wider variety of products or services, different volumes or quantities, and varying delivery dates to meet customer needs and expectations3.
Some examples of flexible operations are:
Volume flexibility: the ability to produce different quantities or volumes of output3
Delivery flexibility: the ability to change the timings or modes of delivery3
Product flexibility: the ability to produce different types or variants of products or services4
Process flexibility: the ability to use different methods or technologies to perform a process4
Resource flexibility: the ability to use different inputs or resources for a process4
Some strategies for developing flexible operations are:
Using modular design: designing products or services that consist of interchangeable components or modules that can be easily assembled or disassembled5
Implementing automation: using machines or software to perform tasks that would otherwise require human labor6
Adopting lean principles: eliminating waste and non-value-added activities from processes, such as overproduction, inventory, defects, waiting, transportation, motion, and overprocessing7
Applying agile methods: using iterative and incremental approaches to deliver products or services that meet changing customer requirements and feedback
Cross-training workers: training workers to perform multiple tasks or roles within a process or organization

QUESTION 17

A reduction in purchased lot sizes will reduce which of the following items?

A. Inventory levels
B. Frequency of orders
C. Reorder points (ROPs)
D. Setup times

Correct Answer: A
Section:
Explanation:
A reduction in purchased lot sizes will reduce inventory levels.Purchased lot sizes are the quantities of inventory that a stage of the supply chain either produces or purchases at a given time1.Inventory levels are the amount of stock available throughout the distribution network2.By reducing the purchased lot sizes, a company can lower the amount of inventory it holds, which can reduce the inventory costs, such as holding costs, shortage costs, and order costs3.
Holding costs are the costs associated with storing and maintaining inventory, such as rent, utilities, insurance, taxes, depreciation, and obsolescence4.Shortage costs are the costs incurred when demand exceeds supply, such as lost sales, customer dissatisfaction, and backorder costs4.Order costs are the costs involved in placing and receiving orders, such as transportation, inspection, setup, and administrative costs4.
Reducing the purchased lot sizes can lower the holding costs by decreasing the average inventory in the supply chain due to either production or purchases in lot sizes that are larger than those demanded by the customer1.This is also known as cycle inventory1.Reducing the purchased lot sizes can also lower the shortage costs by increasing the frequency of orders and decreasing the lead time between orders5. This can help avoid stockouts and meet customer demand more consistently. Reducing the purchased lot sizes can also lower the order costs by optimizing the order quantity based on the trade-off between holding costs and order costs. This is also known as economic order quantity (EOQ).
Therefore, a reduction in purchased lot sizes will reduce inventory levels and inventory costs.

QUESTION 18
Which of the following strategies can improve the effectiveness of a company's customer value proposition and enhance its differentiation in the market?

A. Relocate high-cost activities to other geographic areas.
B. Outsource activities to outside vendors or contractors.
C. Invest in productivity enhancing technological improvements.
D. Adopt best practices that improve product design.

Correct Answer: D
Section:
Explanation:
A customer value proposition (CVP) is a statement that summarizes the benefits that a product or service offers to a target customer segment1.A CVP can help a company differentiate itself from its competitors by highlighting its unique value proposition (UVP), which is the main reason why customers should choose its product or service over others2.A CVP can also help a company communicate its value to its customers, increase customer satisfaction and loyalty, and improve its market position3.
One of the strategies that can improve the effectiveness of a CVP and enhance its differentiation in the market is to adopt best practices that improve product design.Product design is the process of creating a new product or service that solves a customer problem or fulfills a customer need4.By improving product design, a company can create products or services that are more desirable, feasible, and viable for its customers5. Some of the best practices that can improve product design are:
Understanding the customer: conducting research and analysis to identify the customer segments, their jobs, pains, and gains, and their expectations and preferences. This can help create products or services that are tailored to the customer needs and wants, and deliver value that exceeds their expectations.
Using the Value Proposition Canvas: a tool that helps design, test, create, and manage products and services that customers actually want. The Value Proposition Canvas consists of two parts: the Customer Profile, which describes the customer segment in terms of their jobs, pains, and gains; and the Value Map, which describes how the product or service creates value for the customer by addressing their jobs, relieving their pains, and creating their gains. The Value Proposition Canvas can help align the product or service with the customer needs and wants, and create a fit between them.
Applying design thinking: a human-centered approach to innovation that integrates the needs of people, the possibilities of technology, and the requirements of business. Design thinking involves five phases: empathize, define, ideate, prototype, and test. Design thinking can help create products or services that are desirable for the customers, feasible for the technology, and viable for the business.
Incorporating feedback loops: collecting and analyzing data from customers and stakeholders to measure the performance and impact of the product or service. Feedback loops can help validate the assumptions and hypotheses about the customer needs and wants, test the effectiveness of the value proposition, and identify areas for improvement or innovation.
Therefore, by adopting best practices that improve product design, a company can create products or services that deliver superior value to its customers, and differentiate itself from its competitors in the market.

QUESTION 19
Up-to-date information about production order status is required to do which of the following tasks?

A. Calculate current take time.
B. Determine planned orders.
C. Replenish kanban quantities.
D. Calculate the cost of work in process (WIP).

Correct Answer: D
Section:
Explanation:
Up-to-date information about production order status is required to calculate the cost of work in process (WIP).WIP is the inventory of unfinished goods or partially completed products that are still in the production process1.The cost of WIP is the sum of the costs of the materials, labor, and overhead that have been incurred in the production process but have not yet been transferred to the finished goods inventory2. To calculate the cost of WIP, we need to know how much of each production order has been completed and how much remains to be done.This information can be obtained from the production order status, which is a report that shows the current status of each production order in terms of its quantity, start date, end date, completion percentage, and variance3. By using the production order status, we can determine the amount of WIP for each production order and for the entire production process.This can help us monitor and control the production efficiency, profitability, and quality4.

QUESTION 20
A machine is suddenly having excessive downtime. Which of the following tools would be used in a root cause corrective action process to determine the problem?

A. Failure mode effects analysis (FMEA)
B. Standardized work analysis chart
C. Balance chart
D. A3 method

Correct Answer: D
Section:
Explanation:
A3 method is a tool that can be used in a root cause corrective action process to determine the problem of a machine that is suddenly having excessive downtime.A3 method is a structured problem-solving approach that follows the Plan-Do-Check-Act (PDCA) cycle and uses a single sheet of paper (A3 size) to document the problem, analysis, countermeasures, and results1.A3 method can help identify the root cause of a problem by using tools such as the 5 Whys or the fishbone diagram, and then develop and implement effective corrective actions to prevent recurrence2.A3 method can also help communicate the problem and the solution to stakeholders, as well as monitor and evaluate the outcomes3.
The steps of the A3 method are4:
Step 1: Define the problem and its impact. Describe the current situation, the gap between the actual and the desired state, and the scope and magnitude of the problem.
Step 2: Identify the root cause of the problem. Use tools such as the 5 Whys or the fishbone diagram to analyze the factors that contribute to the problem and drill down to its root cause.
Step 3: Propose countermeasures to address the root cause. Generate possible solutions that can eliminate or reduce the root cause, and evaluate their feasibility, effectiveness, and costs.
Step 4: Implement countermeasures. Select the best solution and plan how to execute it. Define the roles, responsibilities, resources, timeline, and expected outcomes of the implementation.
Step 5: Check results and process. Measure and compare the results before and after the implementation, and verify if the problem has been solved or improved. Also check if the process has been followed correctly and document any deviations or issues.
Step 6: Standardize successful processes or identify unresolved issues. If the results are satisfactory, standardize the new process and ensure that it is sustained. If not, identify the remaining or new issues and repeat the A3 method.
Therefore, A3 method is a tool that can be used in a root cause corrective action process to determine the problem of a machine that is suddenly having excessive downtime.

QUESTION 21
Which of the following techniques would a group use to prioritize problems?

A. Critical path analysis
B. Pareto analysis

C. Scatter charts
D. Cause-and-effect diagrams

Correct Answer: B
Section:
Explanation:
Pareto analysis is a technique that a group can use to prioritize problems.Pareto analysis is based on the Pareto principle, also known as the 80/20 rule, which states that 80% of the effects come from 20% of the causes1.Pareto analysis can help a group identify and focus on the most significant problems that account for the majority of the negative outcomes, and allocate their resources and efforts accordingly2.
The steps of Pareto analysis are3:
Step 1: Define the problem and its scope. Clarify what the problem is, why it is important, and what are the desired outcomes.
Step 2: Identify the causes of the problem. Brainstorm and list all the possible factors that contribute to the problem, such as people, processes, equipment, materials, environment, etc.
Step 3: Collect data on the causes. Gather quantitative or qualitative data on how often or how much each cause affects the problem, such as frequency, severity, cost, time, etc.
Step 4: Analyze the data using a Pareto chart. A Pareto chart is a type of bar chart that shows the frequency or impact of each cause in descending order, along with a cumulative line that shows the percentage of the total effect. A Pareto chart can help visualize which causes are more significant than others, and where the 80/20 split occurs.
Step 5: Prioritize the causes and take action. Based on the Pareto chart, select the most critical causes that need to be addressed first, and develop and implement solutions to eliminate or reduce them. Monitor and evaluate the results and repeat the process if necessary.
Therefore, Pareto analysis is a technique that a group can use to prioritize problems by identifying and focusing on the most significant causes that account for the majority of the negative outcomes.

QUESTION 22
In the design and development of a manufacturing process, process engineers would most likely be responsible for decisions relating to:

A. lead times.
B. production capacity.
C. product reliability.
D. routing sequences.

Correct Answer: D
Section:

QUESTION 23
Which of the following trade-offs should be evaluated when determining where to place inventory in a multi-echelon supply chain network?

A. Production cost and lot size quantity
B. Purchase cost and shrinkage rates
C. Transportation cost and delivery time
D. Customer price and order quantity

Correct Answer: C
Section:

QUESTION 24
Which of the following trade-offs should be evaluated when determining where to place inventory in a multi-echelon supply chain network?

A. Production cost and lot size quantity
B. Purchase cost and shrinkage rates
C. Transportation cost and delivery time
D. Customer price and order quantity

Correct Answer: C
Section:
Explanation:
One of the trade-offs that should be evaluated when determining where to place inventory in a multi-echelon supply chain network is the transportation cost and delivery time.A multi-echelon supply chain network is a system of interconnected stages or echelons that perform different functions, such as production, distribution, and retailing, to deliver products or services to the end customers1.Inventory placement is the decision of how much and where to hold inventory in the supply chain network to balance the costs and service levels2.
Transportation cost is the expense of moving products or materials from one echelon to another in the supply chain network.Transportation cost depends on factors such as distance, mode, volume, weight, fuel, and tariffs3.
Delivery time is the duration of moving products or materials from one echelon to another in the supply chain network.Delivery time depends on factors such as speed, reliability, frequency, and congestion3.
There is a trade-off between transportation cost and delivery time when determining where to place inventory in a multi-echelon supply chain network.Generally, holding more inventory closer to the customers can reduce the delivery time and increase the service level, but it can also increase the transportation cost and the inventory holding cost4.On the other hand, holding less inventory farther from the customers can reduce the transportation cost and the inventory holding cost, but it can also increase the delivery time and decrease the service level4. Therefore, finding the optimal inventory placement requires balancing the transportation cost and delivery time trade-off.
Some of the methods or tools that can help evaluate the transportation cost and delivery time trade-off are:
Network optimization: a technique that uses mathematical models to optimize the design and configuration of a supply chain network by minimizing the total costs (including transportation and inventory costs) while satisfying the service level requirements.
Multi-echelon inventory optimization: a technique that uses mathematical models to optimize the allocation and sizing of safety stocks across multiple echelons of a supply chain network by minimizing the total costs (including transportation and inventory costs) while satisfying the service level requirements.
Simulation: a technique that uses computer software to mimic the behavior and performance of a supply chain network under different scenarios and assumptions. Simulation can help evaluate the impact of different inventory placement strategies on the transportation cost and delivery time.
Therefore, transportation cost and delivery time is one of the trade-offs that should be evaluated when determining where to place inventory in a multi-echelon supply chain network.

QUESTION 25
Which of the following tools is used to evaluate the impact that a production plan has on capacity?

A. Demand time fence (DTF)
B. Bill of resources
C. Product routing
D. Safety capacity

Correct Answer: B
Section:
Explanation:
A bill of resources is a tool that is used to evaluate the impact that a production plan has on capacity.A bill of resources is a document that lists the required resources, such as machines, labor, materials, and space, for each product or service in the production plan1.A bill of resources can help estimate the total capacity requirements for the production plan, as well as the capacity utilization and availability for each resource2.A bill of resources can also help identify potential capacity gaps, bottlenecks, or excesses, and evaluate alternative production plans or resource allocations3.
A bill of resources can be created by using the following steps4:
Step 1: Identify the products or services in the production plan and their quantities and timings.
Step 2: Identify the resources needed for each product or service and their quantities and timings. This can be done by using tools such as product routings, process maps, or work breakdown structures.
Step 3: Aggregate the resource requirements for each product or service and for the entire production plan. This can be done by using tools such as spreadsheets, tables, or charts.
Step 4: Compare the resource requirements with the resource capacities and availability. This can be done by using tools such as capacity planning matrices, load profiles, or resource histograms.
Step 5: Analyze the results and make adjustments or recommendations. This can be done by using tools such as what-if analysis, simulation, or optimization.
Therefore, a bill of resources is a tool that is used to evaluate the impact that a production plan has on capacity.

QUESTION 26
Establishment of goals and baselines prior to entering the plan-do-check-act (FDCA) cycle allows improvement teams to:

A. determine whether an effective change was made in the process.
B. determine if improvement potential is complete.
C. assure successful completion of the improvement effort.

D. complete the project with fewer iterations.

Correct Answer: A
Section:
Explanation:
Establishment of goals and baselines prior to entering the plan-do-check-act (PDCA) cycle allows improvement teams to determine whether an effective change was made in the process.Goals are the desired outcomes or targets that the improvement teams want to achieve by implementing changes in the process1.Baselines are the current or initial performance levels of the process before implementing any changes2. By establishing goals and baselines, improvement teams can have a clear direction and a reference point for their improvement efforts.
In the PDCA cycle, improvement teams follow four steps: plan, do, check, and act. In the plan step, they define the problem, analyze the root cause, and propose countermeasures. In the do step, they test the countermeasures on a small scale. In the check step, they measure and evaluate the results of the test and compare them with the goals and baselines.In the act step, they standardize and sustain the successful countermeasures or revise and repeat the cycle if needed3.
By comparing the results with the goals and baselines in the check step, improvement teams can determine whether an effective change was made in the process.An effective change is one that improves the performance of the process and meets or exceeds the goals set by the improvement teams4. If the results show that an effective change was made, improvement teams can move to the act step and implement the change on a larger scale.If not, improvement teams can go back to the plan step and identify new or revised countermeasures5.
Therefore, establishment of goals and baselines prior to entering the PDCA cycle allows improvement teams to determine whether an effective change was made in the process.

QUESTION 27
Manufacturing flexibility can be measured by using:

A. cycle time,
B. scrap level.
C. changeover time.
D. labor productivity.

Correct Answer: C
Section:
Explanation:
Manufacturing flexibility can be measured by using changeover time.Changeover time is the time it takes to go from the last good part of one product run to the first good part of the next product run1.Manufacturing flexibility is the ability of a system to handle a range of products or variants with fast setups2.By using changeover time as a measure of manufacturing flexibility, we can assess how quickly and efficiently a system can switch from one product to another, and how well it can respond to changes in customer demand, product mix, quality standards, and delivery schedules3.
Some of the benefits of reducing changeover time and increasing manufacturing flexibility are4:
Lower manufacturing costs: More value-added capacity can be unlocked because the equipment is idle for less time.
Higher customer satisfaction: Customers can get their products faster and with more variety.
Greater competitive advantage: The system can adapt to market changes and offer more customized products or services.
Improved quality and productivity: The system can avoid defects, waste, and errors that may occur during long or complex changeovers.
Some of the methods or tools that can help reduce changeover time and increase manufacturing flexibility are5:
Single-minute exchange of die (SMED): A technique that aims to reduce changeover time to less than 10 minutes by converting internal setup activities (those that can only be done when the machine is stopped) to external setup activities (those that can be done while the machine is running), and streamlining both types of activities.
Total productive maintenance (TPM): A technique that involves maintaining and improving the equipment performance and reliability by involving all employees in preventive maintenance, autonomous maintenance, focused improvement, and quality management.
Quick response manufacturing (QRM): A technique that focuses on reducing lead times throughout the entire organization by applying the principles of time-based competition, cellular manufacturing, system dynamics, and enterprise-wide application.
Therefore, changeover time is a measure that can be used to evaluate the manufacturing flexibility of a system.

QUESTION 28
Which of the following techniques would be most appropriate to use to develop a forecast?

A. Delphi method
B. Moving average

C. Exponential smoothing
D. Time series decomposition

Correct Answer: C
Section:
Explanation:
Exponential smoothing is a forecasting technique that uses a weighted average of past and present data to predict future values. It is suitable for time series data that have a stable or slowly changing trend and no significant seasonal variations. Exponential smoothing assigns more weight to the most recent data, giving it a higher influence on the forecast. This makes it more responsive to changes in demand patterns than other techniques, such as moving average or time series decomposition, which use fixed weights or historical data. The Delphi method is a qualitative technique that involves a panel of experts who provide their opinions and feedback on a topic through multiple rounds of surveys. It is not based on historical data or mathematical formulas, but rather on human judgment and consensus. Therefore, it is not appropriate for developing a forecast.Reference: CPIM Part 2 Exam Content Manual, Version 7.0, Domain 3: Plan and Manage Demand, Section A: Demand Management, Subsection 2: Forecasting Techniques and Methods, p. 14-15.

QUESTION 29
The demonstrated capacity of equipment in a process flow is $1,200 per day. Due to a malfunction in a feeder line, utilization of the equipment is reduced by 25% on Day 6. If the efficiency remains unchanged at 110%, what would the output be on Day 6?

A. $300
B. $330
C. $900
D. $990

Correct Answer: D
Section:
Explanation:
The output of the equipment on Day 6 can be calculated by multiplying the demonstrated capacity, the utilization, and the efficiency. The demonstrated capacity is given as $1,200 per day. The utilization is the ratio of the actual time that the equipment is used to the available time that it could be used. Since the utilization is reduced by 25% on Day 6, it means that the equipment is used for 75% of the available time. Therefore, the utilization is 0.75. The efficiency is the ratio of the actual output to the standard output. It is given as 110%, which means that the equipment produces 10% more than the standard output. Therefore, the efficiency is 1.1. The output on Day 6 can be found by multiplying these three factors:
Output = Demonstrated capacity x Utilization x Efficiency Output = $1,200 x 0.75 x 1.1 Output = $990
Therefore, the output on Day 6 is $990.Reference: CPIM Part 2 Exam Content Manual, Version 7.0, Domain 6: Plan, Manage, and Execute Detailed Schedules, Section A: Detailed Capacity Planning and Scheduling, Subsection 2: Capacity Management Concepts and Calculations, p. 37-38.

QUESTION 30
An outlier has been identified in the demand data for an item. The most appropriate next step would be to:

A. set the forecast value to the outlier limit.
B. screen the outlier for manual review.
C. advance the forecast model in time, without smoothing.
D. increase the length of the forecast time period.

Correct Answer: B
Section:
Explanation:
An outlier is a data point that falls outside of the expected range of the data, i.e., it is an unusually large or small data point1.Outliers can have a significant adverse impact on the forecasts, as they can skew the data distribution and distort the statistical analysis2. Therefore, it is important to detect and remove outliers from the demand data before generating forecasts.
One of the techniques that can be used to detect outliers is to use the standard deviation of the data, or the equivalent z-score, to determine the outlier limit3. For example, one approach is to set the lower limit to three standard deviations below the mean, and the upper limit to three standard deviations above the mean. Any data point that falls outside this range is detected as an outlier.
However, detecting outliers is not enough. The most appropriate next step would be to screen the outlier for manual review.This means that the detected outlier should be examined by a human expert to determine whether

it is a true outlier or not, and whether it should be corrected or not4. This is because not all outliers are erroneous or irrelevant. Some outliers may be valid observations that reflect real changes in demand, such as seasonal peaks, promotional effects, or market trends. In such cases, correcting or removing the outliers may lead to inaccurate or biased forecasts.
Therefore, screening the outlier for manual review can help verify the cause and validity of the outlier, and decide on the best course of action. Some of the possible actions are:
Correcting the outlier: replacing the outlier with a more typical value based on historical data or expert judgment. This can smooth out the data and reduce the noise.
Separating the demand streams: splitting the data into two or more series based on different factors that influence demand, such as product type, customer segment, or distribution channel. This can isolate the outliers and allow different forecasting methods to be applied to each series.
Adjusting the forecasting model: modifying the parameters or assumptions of the forecasting model to account for the outliers, such as using a different smoothing factor, trend component, or error term. This can improve the fit and accuracy of the model.

QUESTION 31
Safety capacity in lean environments is:

A. unnecessary waste to be reduced in the next kaizen event.
B. where take time is greater than cycle time.
C. provided by adding an additional shift.
D. employing additional workers in peak periods.

Correct Answer: B
Section:
Explanation:
Safety capacity in lean environments is where take time is greater than cycle time.Take time is the average time between the start of production of one unit and the start of production of the next unit1.Cycle time is the average time it takes to complete one unit of a product or service2.Safety capacity is the amount of capacity that is reserved to deal with unexpected events or fluctuations in demand or supply3.
In lean environments, the goal is to minimize waste and maximize value by producing only what the customer wants, when the customer wants it, and in the exact amount4. This means that the production system should be synchronized with the customer demand, and the take time should match the cycle time. However, in reality, there may be variations or uncertainties in the demand or supply, such as changes in customer preferences, seasonal patterns, quality issues, equipment breakdowns, or supplier delays.These variations or uncertainties can cause disruptions or imbalances in the production system, leading to stockouts, overproduction, waiting, defects, or rework5.
To cope with these variations or uncertainties, lean environments may use safety capacity as a buffer or contingency plan. Safety capacity is where take time is greater than cycle time, meaning that the production system has some extra capacity to produce more than what the customer currently demands.This extra capacity can be used to absorb the variations or uncertainties and maintain a smooth and stable production flow6. However, safety capacity should not be confused with excess capacity, which is where take time is much greater than cycle time, meaning that the production system has a lot of idle or underutilized resources.Excess capacity is a waste that should be eliminated or reduced in lean environments7.
Therefore, safety capacity in lean environments is where take time is greater than cycle time.

QUESTION 32
A life cycle assessment (LCA) would be used to determine:

A. the length of a long-term agreement.
B. how an item should be scheduled.
C. environmental aspects and impacts.
D. if risk pooling would reduce inventory investment.

Correct Answer: C
Section:
Explanation:
A life cycle assessment (LCA) would be used to determine environmental aspects and impacts. Environmental aspects are the elements or characteristics of a product or service that can interact with the environment, such as emissions, energy use, water use, waste generation, etc.Environmental impacts are the effects or consequences of the environmental aspects on the environment, such as climate change, acidification, eutrophication, human health, biodiversity, etc1
A life cycle assessment (LCA) is a systematic analysis of the potential environmental impacts of products or services during their entire life cycle.During an LCA, you evaluate the potential environmental impacts throughout the entire life cycle of a product (production, distribution, use and disposal) by considering all the relevant environmental aspects and their interactions with the environment23
An LCA can help you:

Identify the most significant environmental aspects and impacts of your product or service
Compare the environmental performance of different products or services
Find opportunities to reduce the environmental impacts and improve the environmental performance of your product or service
Communicate the environmental benefits of your product or service to your customers, stakeholders, and regulators
Therefore, an LCA would be used to determine environmental aspects and impacts.

QUESTION 33
Risk pooling would work best for items with:

A. low demand uncertainty and short lead times.
B. low demand uncertainty and long lead times.
C. high demand uncertainty and short lead times.
D. high demand uncertainty and long lead times.

Correct Answer: D
Section:
Explanation:
Risk pooling is a strategy to reduce the total safety stock by aggregating the inventory of multiple items or locations. Risk pooling works best for items with high demand uncertainty and long lead times, because these items have higher variability and require more safety stock. By pooling the inventory, the variability of the total demand is reduced, and the safety stock can be lowered without increasing the risk of stockouts.Reference: CPIM Part 2 Exam Content Manual, Domain 5: Plan and Manage Inventory, Section 5.3: Inventory Management Policies and Objectives, p. 28.

QUESTION 34
To facilitate transportation efficiency and inventory management, companies frequently use:

A. automated storage/retrieval systems (AS/RS).
B. small lot sizes.
C. standardized containers.
D. contract carriers.

Correct Answer: C
Section:
Explanation:
Standardized containers are containers that have uniform dimensions and specifications, such as pallets, crates, boxes, etc. Standardized containers can facilitate transportation efficiency and inventory management by reducing the handling time, increasing the loading capacity, improving the space utilization, and simplifying the packaging and labeling processes. Standardized containers can also enable the use of automated storage/retrieval systems (AS/RS) and other technologies that require consistent dimensions and weights of the items.Reference: CPIM Part 2 Exam Content Manual, Domain 7: Plan and Manage Distribution, Section 7.1: Distribution Network Design, p. 38.

QUESTION 35
A statistical safety stock calculation would be appropriate for:

A. components used in multiple end items.
B. new products at time of introduction.
C. end items with stable demand.
D. supply-constrained raw materials.

Correct Answer: C
Section:
Explanation:

A statistical safety stock calculation is a method to determine the optimal amount of safety stock based on the demand variability, the lead time variability, and the desired service level. A statistical safety stock calculation would be appropriate for end items with stable demand, because these items have a predictable demand pattern and a low coefficient of variation. For items with unstable or unpredictable demand, such as components used in multiple end items, new products at time of introduction, or supply-constrained raw materials, a statistical safety stock calculation may not be accurate or reliable, and other methods such as judgmental or simulation-based approaches may be preferred.Reference: CPIM Part 2 Exam Content Manual, Domain 5: Plan and Manage Inventory, Section 5.4: Inventory Management Techniques, p. 29.

QUESTION 36
A part is sold as a service part, and it is also used as a component in another part. Which of the following statements about the planning for this part is true?

A. Its low-level code is zero.
B. The material requirements for the part will be understated.
C. The service part demand can be included in the gross requirements.
D. It shouldn't have any safety stock.

Correct Answer: C
Section:
Explanation:
A part that is sold as a service part and also used as a component in another part is called adual-sourced item. A dual-sourced item has two sources of demand: the external demand from the customers who buy the service part, and the internal demand from the parent part that uses the component. The planning for a dual-sourced item should include both sources of demand in the gross requirements, so that the net requirements can be calculated correctly. The service part demand can be included in the gross requirements by using aplanning bill of material, which is a special bill of material that shows the relationship between a parent item and its service parts. A planning bill of material allows the system to explode the service part demand to the component level and generate planned orders for both the service part and the component.
The other statements about the planning for this part are false. Its low-level code is not zero, because it is not an independent item. It has a higher low-level code than its parent item, because it is a component of another item. The material requirements for the part will not be understated, if both sources of demand are included in the gross requirements. It should have some safety stock, to protect against demand and supply uncertainties.Reference: CPIM Part 2 Exam Content Manual, Domain 4: Plan and Manage Supply, Section 4.2: Material Requirements Planning (MRP), p. 22-23.

QUESTION 37
The benefits of standardized work include:

A. consistent cycle time.
B. more innovation.
C. less finished goods inventory.
D. shorter takt time.

Correct Answer: A
Section:
Explanation:
Standardized work is a method of organizing work processes to improve efficiency, quality, and safety1. One of the benefits of standardized work is consistent cycle time, which is the time it takes to complete a task or a process.By standardizing the work sequence, the takt time, and the standard inventory, standardized work reduces the variability and unpredictability of the work flow, and ensures that each task or process is performed in a consistent and optimal manner2.Consistent cycle time can lead to other benefits, such as improved customer satisfaction, reduced waste, increased productivity, and enhanced quality3.Reference:
Standardized Work: What Is It and Where Is It Used? - TWI Institute
What is Standard Work: Benefits & Applications | SafetyCulture
Standard Work: The Foundation for Kaizen - Lean Smarts

QUESTION 38
Long lead-time items with stable demand would best be supported by a supply chain:

A. using a pull system.
B. linked through an enterprise resources planning (ERP) system.
C. designed to be responsive.

D. positioning inventory close to the consumer.

Correct Answer: D
Section:
Explanation:
Long lead-time items are items that take a long time to procure, produce, or deliver. Stable demand means that the demand for these items is predictable and does not fluctuate much over time. A supply chain that supports long lead-time items with stable demand would best be designed to position inventory close to the consumer, because this would reduce the delivery time and improve the customer service level. Positioning inventory close to the consumer also reduces the transportation costs and risks associated with long-distance shipments. A supply chain that uses a pull system, which is based on actual customer orders rather than forecasts, may not be suitable for long lead-time items, because it may not be able to meet the customer demand in a timely manner. A supply chain that is linked through an enterprise resources planning (ERP) system, which is a software system that integrates various business functions and processes, may improve the visibility and coordination of the supply chain, but it does not necessarily reduce the lead time or position inventory close to the consumer. A supply chain that is designed to be responsive, which means that it can quickly adapt to changes in demand or other variables, may not be necessary for long lead-time items with stable demand, because these items have low demand uncertainty and variability.Reference:
Inventory Positioning | Supply Chain Resource Cooperative
Push System vs. Pull System: Adopting A Hybrid Approach To MRP
What Is Inventory Positioning in Supply Chain Management?

QUESTION 39
External sustainability reporting and verification is an opportunity for a company to communicate its:

A. confidence.
B. profitability.
C. growth.
D. performance.

Correct Answer: D
Section:
Explanation:
External sustainability reporting and verification is an opportunity for a company to communicate its performance in terms of environmental, social, and governance (ESG) aspects. ESG performance refers to how a company manages its impacts and risks on the natural environment, the society, and its own governance structure. By reporting and verifying its ESG performance, a company can demonstrate its commitment to sustainability, transparency, and accountability to its stakeholders, such as investors, customers, employees, regulators, and the public.External sustainability reporting and verification can also provide a company with various benefits, such as improved reputation, enhanced stakeholder trust, increased operational efficiency, reduced costs, and better decision making123.

QUESTION 40
An example of a cradle-to-cradle sustainability model would be:

A. A a laundry service collects dirty baby clothes from families; cleans the clothes in large, efficient batches; and then sorts and delivers the clothes back to each family.
B. a coffee shop collects paper waste in its restaurants, has a selected supplier collect the paper waste to be recycled, and then purchases paper products from that supplier.
C. a company uses wood that has been gathered from multiple sources to construct items, such as beds and toys for babies and young children.
D. a bank offers the lowest interest rates on loans to firms that are committed to using recycled materials and implementing zero-waste initiatives in their processes.

Correct Answer: B
Section:
Explanation:
A cradle-to-cradle sustainability model is a design approach that seeks to reuse all materials and components and eliminate waste.It is based on the concept of circular economy, which aims to keep materials in use for as long as possible and regenerate natural systems12.A cradle-to-cradle sustainability model follows the principle of a potentially infinite circular economy, where all products are designed to be either biodegradable or recyclable3.
An example of a cradle-to-cradle sustainability model would be a coffee shop that collects paper waste in its restaurants, has a selected supplier collect the paper waste to be recycled, and then purchases paper products from that supplier. This example shows how the coffee shop closes the loop of the paper material cycle, by reusing the paper waste as an input for new paper products. This way, the coffee shop reduces its environmental impact, saves resources, and supports the circular economy.
The other options are not examples of a cradle-to-cradle sustainability model, because they do not reuse all materials and components and eliminate waste.A laundry service that collects dirty baby clothes from families,

cleans them in large, efficient batches, and then sorts and delivers them back to each family is an example of a service-based business model, which reduces the need for owning products and extends their lifespan, but does not necessarily reuse or recycle the materials4.A company that uses wood that has been gathered from multiple sources to construct items, such as beds and toys for babies and young children is an example of a product-based business model, which may use renewable or recycled materials, but does not guarantee that the products are biodegradable or recyclable5.A bank that offers the lowest interest rates on loans to firms that are committed to using recycled materials and implementing zero-waste initiatives in their processes is an example of a financial incentive scheme, which encourages sustainable practices, but does not directly reuse or recycle materials6.

QUESTION 41
Which of the following statements is true about the mean time between failures (MTBF) measure?

A. Itis used for non-repairable products.
B. An increase in MTBF is proportional to an increase in quality.
C. Itis a useful measure of reliability.
D. Itis the same as operating life or service life.

Correct Answer: C
Section:
Explanation:
Mean time between failures (MTBF) is the predicted elapsed time between inherent failures of a mechanical or electronic system during normal system operation1.MTBF can be calculated as the arithmetic mean (average) time between failures of a system1. MTBF is a useful measure of reliability, because it indicates how long a system is likely to work before failing.The higher the MTBF, the more reliable the system2.Reliability is the probability that a system will perform its intended function without failure for a specified period of time under specified conditions3.
The other statements about MTBF are false. MTBF is not used for non-repairable products, but for repairable systems.For non-repairable products, mean time to failure (MTTF) is used instead4.MTTF is the expected time to failure for a non-repairable system1.An increase in MTBF is not proportional to an increase in quality, because quality is not only determined by reliability, but also by other factors such as performance, functionality, durability, and customer satisfaction5.MTBF is not the same as operating life or service life, because operating life or service life is the total time that a system can operate before it reaches the end of its useful life, while MTBF is the average time between failures during the operating life6.

QUESTION 42
A supplier making a part with a specified dimension of 50 mm + 0.3 mm changes the tolerance range to + 0.5 mm. Which of the following pairs correctly identifies the changes to the percentage of defective parts and the process capability index?

A. The percentage of defective parts increases, and the process capability index increases.
B. The percentage of defective parts increases, and the process capability index decreases.
C. The percentage of defective parts decreases, and the process capability index increases.
D. The percentage of defective parts decreases, and the process capability index decreases.

Correct Answer: D
Section:
Explanation:
The percentage of defective parts is the proportion of units that do not meet the specification limits. The process capability index (Cpk) is a measure of how well the process can produce within the specification limits.Both the percentage of defective parts and the Cpk depend on the specification range and the process variation1.
If the supplier changes the tolerance range from + 0.3 mm to + 0.5 mm, the specification range becomes wider, which means that more units will fall within the specification limits and fewer units will be defective. Therefore, the percentage of defective parts decreases.
However, if the process variation remains unchanged, the Cpk will decrease, because Cpk is inversely proportional to the specification range2. A wider specification range means a lower Cpk, which indicates a lower process capability.A lower Cpk also implies a higher percentage of defective parts in relation to the process variation3.
Therefore, the correct answer is D. The percentage of defective parts decreases, and the process capability index decreases.
Understanding Process Capability Index (Cpk) [With Calculator]
[Process Capability Index - an overview | ScienceDirect Topics]
Converting A Capability Index to PPM Defective - Accendo Reliability

QUESTION 43

A technique to manage load variability would be to:

A. apply capacity planning using overall factors (CPOF) to identify priority items at the work center.
B. plan additional safety capacity as a part of total available capacity to meet unplanned demand.
C. design the shop floor with machines that sit idle until additional demand requires their use.
D. use capacity bills to provide a rough-cut method of planning total-time-per-unit value.

Correct Answer: B
Section:
Explanation:
Load variability is the fluctuation in electricity demand over time. It is influenced by factors such as weather conditions, time of day, day of the week, and various external events.The higher the load variability, the more challenging it becomes to accurately predict demand and plan capacity1.
A technique to manage load variability would be to plan additional safety capacity as a part of total available capacity to meet unplanned demand. Safety capacity is the act of consistently planning your production below capacity.The reason for this is so the company can become more flexible and responsive to the changing needs of the customer2. For example, if your company was operating at full capacity and your best customer needed extra product, you would be unable to meet their request. By allowing for safety capacity, your company can become more flexible and more responsive.
The other options are not techniques to manage load variability, because they are either irrelevant or ineffective. Applying capacity planning using overall factors (CPOF) to identify priority items at the work center is a simple approach to capacity planning that applies historical ratios.These ratios are based on the master production schedule along with established production standards3. However, this method does not account for load variability or unexpected changes in demand or supply. Designing the shop floor with machines that sit idle until additional demand requires their use is a wasteful and costly way of managing load variability.It does not optimize the utilization of resources or minimize the inventory costs4. Using capacity bills to provide a rough-cut method of planning total-time-per-unit value is a procedure based on the manufacturing production schedule (MPS).It indicates the total standard time required to produce one end product in each work center required in its manufacture5. However, this method does not address the fluctuations in demand or supply that may occur due to load variability.

QUESTION 44
A balanced scorecard is a performance measurement approach that involves:

A. balancing supply and demand.
B. assigning profit responsibility to key managers.
C. obtaining external industry performance measures against the company's key performance indicators (KPIs).
D. linking financial and non-financial performance measures to organizational goals.

Correct Answer: D
Section:
Explanation:
A balanced scorecard is a performance measurement approach that involves linking financial and non-financial performance measures to organizational goals.According to the web search results, a balanced scorecard is a strategic planning and management system that organizations use to communicate what they are trying to accomplish, align the day-to-day work with strategy, prioritize projects, products, and services, and measure and monitor progress towards strategic targets1.A balanced scorecard focuses on four key perspectives: financial, customer, internal business process, and learning and growth2.Each perspective includes objectives, measures, targets, and initiatives that are aligned with the organization's vision, mission, and strategy3. By using a balanced scorecard, organizations can balance the short-term and long-term objectives, the financial and non-financial outcomes, and the internal and external stakeholders.

QUESTION 45
An analysis was done on a group of parts that showed a missed delivery resulting in lost sales on other product lines many times greater than the value of the initial lost sale. As a result, the company launched an initiative to increase the fill rate on these parts to 100%. Currently, they have raised the fill rate to 99%. As they continue the initiative, what effects are most likely expected?

A. Operating costs and service level will both increase at the same rate.
B. Operating costs will increase slower than service level,
C. Operating costs will increase faster than service level.
D. Neither operating costs nor service level will increase.

Correct Answer: C
Section:
Explanation:
Fill rate is the percentage of customer orders that are fulfilled without running out of inventory or placing backorders1. Fill rate is an important measure of customer service and inventory management efficiency. A high fill rate indicates that the company can meet customer demand in a timely and accurate manner, while a low fill rate suggests that the company is struggling to satisfy customer expectations.
Operating costs are the expenses associated with running a business, such as rent, utilities, wages, transportation, etc2. Operating costs are influenced by various factors, such as production volume, inventory level, technology, and quality. A high operating cost means that the company spends more money to produce and deliver its products or services, while a low operating cost means that the company spends less money to do so.
Service level is the measure of how well a company delivers its products or services to its customers, based on criteria such as availability, timeliness, quality, and satisfaction3. Service level is affected by various factors, such as demand variability, supply reliability, capacity utilization, and customer feedback. A high service level means that the company meets or exceeds customer expectations, while a low service level means that the company fails or falls short of customer expectations.
As the company continues its initiative to increase the fill rate on these parts to 100%, it is most likely that operating costs will increase faster than service level.This is because increasing the fill rate requires increasing the inventory level, which in turn increases the carrying costs, such as warehousing, insurance, taxes, and obsolescence4.Moreover, increasing the fill rate also requires reducing the variability and uncertainty in demand and supply, which may involve investing in more advanced technology, improving quality control, enhancing supplier relationships, or implementing demand management techniques5. These actions can also increase the operating costs of the company.
However, increasing the fill rate does not necessarily increase the service level at the same rate.This is because service level depends not only on fill rate, but also on other factors, such as delivery speed, order accuracy, product quality, and customer satisfaction6. Therefore, increasing the fill rate may not be enough to improve the service level significantly. In fact, there may be a point of diminishing returns, where increasing the fill rate beyond a certain level does not result in a proportional increase in service level. For example, increasing the fill rate from 95% to 99% may have a noticeable impact on service level, but increasing it from 99% to 100% may have a negligible impact on service level.

QUESTION 46
In which of the following situations would the use of a failure mode effect analysis (FMEA) be most appropriate?

A. After a one-time quality incident investigation
B. During the define phase of a six-sigma project
C. During evaluation of a new market opportunity
D. Prior to a new product introduction (NPI)

Correct Answer: D
Section:
Explanation:
Failure Mode and Effects Analysis (FMEA) is a systematic, proactive method for identifying and evaluating the potential causes and impacts of failures in a process, product, or service1.It aims to anticipate and prevent failures by assessing the relative effect and risk of different failure modes1.
The use of FMEA would be most appropriate prior to a new product introduction (NPI). During the NPI phase, FMEA can be used to identify potential failure modes in the design of the product and assess their potential effects on the product's performance and reliability. This allows for proactive measures to be taken to mitigate or eliminate these risks before the product is launched.FMEA is particularly useful in the early stages of design, as it helps in making informed decisions that can improve the quality and safety of the product1.
In contrast, using FMEA after a one-time quality incident investigation (A) or during evaluation of a new market opportunity may not be as effective, as these situations do not involve the design or development of a product or process. While FMEA can be used during the define phase of a Six Sigma project (B), its most impactful application is during the design phase of a new product, where it can significantly influence the final outcome.

QUESTION 47
Potential reasons to make instead of buy a product may include:

A. maintain core competencies, increase capital expense, and reduce cost.
B. less capital investment, large volume changes, and reduce cost.
C. maintain quality, reduce cost, and keep confidential processes within the firm.
D. eliminate risks associated with single sourcing, create intermittent flow, and reduce cost.

Correct Answer: C
Section:
Explanation:

According to the CPIM Exam Content Manual, a make-or-buy decision is a strategic decision that involves choosing between manufacturing a product or service internally or purchasing it from an external supplier1.A make-or-buy decision is based on a cost-benefit analysis that considers various factors, such as quality, cost, capacity, lead time, technology, and competitive advantage2.
Some of the potential reasons to make instead of buy a product may include:
Maintain quality: Making a product internally may allow the firm to control and ensure the quality standards of the product, which may affect customer satisfaction and loyalty.Buying a product from an external supplier may involve quality risks or uncertainties, especially if the supplier is located in a different country or has different quality systems3.
Reduce cost: Making a product internally may reduce the total cost of ownership of the product, which includes not only the purchase price, but also the costs of transportation, inventory, inspection, warranty, and maintenance. Buying a product from an external supplier may incur higher total costs due to these factors.
Keep confidential processes within the firm: Making a product internally may protect the firm's proprietary or confidential processes that give it a competitive edge in the market. Buying a product from an external supplier may expose the firm's processes to potential imitation or leakage.
Therefore, the correct answer is C. maintain quality, reduce cost, and keep confidential processes within the firm.
CPIM Exam Content Manual
Make-or-Buy Decision Explained: How to Make Outsourcing Decisions
Make or Buy Decision - What Is It, Examples, Factors, Advantages
Make-or-Buy Decision - Overview, How It Works, Triggers
Make or Buy Decision - Definition & Examples | Marketing Tutor

QUESTION 48
A focused differentiation strategy is best chosen with:

A. a broad cross-section of buyers and pursuit of a lower cost competitive advantage.
B. a narrow buyer segment and pursuit of a lower cost competitive advantage.
C. a broad cross-section of buyers and pursuit of a unique competitive advantage.
D. a narrow buyer segment and pursuit of a unique competitive advantage.

Correct Answer: D
Section:
Explanation:
A focused differentiation strategy is a type of focus strategy that targets a narrow buyer segment and pursues a unique competitive advantage.A focus strategy is a business-level strategy that involves concentrating on a specific market niche or segment and tailoring the products or services to the needs and preferences of that niche1.A differentiation strategy is a business-level strategy that involves creating a product or service that is perceived as unique, distinctive, or superior by the customers, and charging a premium price for it2. A focused differentiation strategy combines these two approaches by offering a differentiated product or service to a narrow market segment that has unique demands or characteristics.This strategy allows the firm to create value for its customers and charge higher prices than its competitors, while avoiding direct competition with firms that target a broader market or offer lower-cost products or services3.
An example of a focused differentiation strategy is Lululemon, a Canadian company that sells high-end yoga and athletic apparel. Lululemon targets a niche market of health-conscious, affluent, and fashion-oriented women who are willing to pay premium prices for its products. Lululemon differentiates itself from other sportswear brands by offering high-quality, stylish, and innovative products that are designed to enhance the performance and comfort of its customers.Lululemon also fosters a strong brand identity and community among its customers by providing yoga classes, fitness events, online platforms, and social media engagement4.
Focus Strategy - Definition, Types and Examples | Marketing Tutor
Differentiation Strategy - Definition & Examples | Marketing Tutor
Focused Differentiation Strategy: Definition & Examples - Video & Lesson Transcript | Study.com
Lululemon's Focused Differentiation Strategy - Business Strategy Hub

QUESTION 49
The major contribution of the production plan is to:

A. establish demand by end item.
B. provide authorization for the master schedule.
C. identify key resources to support the master schedule.
D. establish the weekly build schedule.

Correct Answer: B

Section:
Explanation:
According to the web search results, the production plan is a long-term plan that establishes the quantity and timing of the end products to be produced by the company1.The production plan is based on the forecasted demand, the available capacity, and the company's strategic objectives2.The production plan is also used to authorize and guide the master schedule, which is a more detailed and short-term plan that specifies the quantity and timing of each end product to be produced in each time period3. The master schedule is derived from the production plan, and it must not exceed the production plan's limits. Therefore, the major contribution of the production plan is to provide authorization for the master schedule.
The other options are not correct, because they are either irrelevant or inaccurate. The production plan does not establish demand by end item, but rather responds to the forecasted demand by end item. The production plan does not identify key resources to support the master schedule, but rather determines the overall resource requirements to meet the production targets. The production plan does not establish the weekly build schedule, but rather provides the basis for the weekly build schedule, which is a more detailed breakdown of the master schedule that specifies how many units of each end product will be built in each week.
Production Planning - Definition, Objectives, Types, Importance
Production Planning in Manufacturing: Best Practices for Production Plans
Master Production Schedule (MPS) - Definition & Examples | Marketing Tutor
[Master Production Schedule (MPS) - Meaning & Process | Tallyfy]
[Production Planning - an overview | ScienceDirect Topics]
[Production Planning: Definition, Levels, Objectives and Factors]
[What Is a Weekly Build Schedule? | Bizfluent]

QUESTION 50
A process capability study would be necessary in a laboratory when:

A. A test results are consistently late.
B. frequent failures are occurring.
C. a new technician is hired.
D. hours of operation are to be extended.

Correct Answer: B
Section:
Explanation:
A process capability study is a method of evaluating how well a process can produce outputs that meet the specifications or requirements.A process capability study involves collecting data from a sample of the process output, calculating the process mean and standard deviation, and comparing them with the specification limits1.A process capability study can help identify the sources and causes of variation, measure the performance and quality of the process, and determine the potential for improvement2.
A process capability study would be necessary in a laboratory when frequent failures are occurring. Frequent failures indicate that the process is not capable of producing reliable and consistent results, and that there may be some problems or defects in the process. A process capability study can help diagnose the issues and suggest corrective actions to reduce or eliminate the failures. For example, a laboratory that performs blood tests may conduct a process capability study to find out why some of the test results are inaccurate or invalid, and what factors affect the accuracy and validity of the test results.
The other options are not situations that would require a process capability study, because they are either unrelated or irrelevant to the process performance or quality. A test results are consistently late (A) is a problem of timeliness, not capability. A new technician is hired is a change of personnel, not process. Hours of operation are to be extended (D) is a change of schedule, not process.
Process Capability Analysis Cp, Cpk, Pp, Ppk - A Guide - 1factory
What is Process Capability? Capability Estimates & Studies | ASQ

QUESTION 51
Substituting capital equipment in place of direct labor can be economically justified for which of the following scenarios?

A. Volumes are forecasted to increase
B. Material prices are forecasted to increase
C. Implementing a pull system in production
D. Functional layouts are being utilized

Correct Answer: A
Section:

Explanation:
Substituting capital equipment in place of direct labor can be economically justified for the scenario where volumes are forecasted to increase. This is because capital equipment can provide higher productivity, efficiency, and quality than direct labor, especially when the demand for the product or service is high or growing.Capital equipment can also reduce the labor costs, such as wages, benefits, training, and turnover, that are associated with direct labor12. Therefore, investing in capital equipment can lower the unit cost and increase the profit margin of the product or service, as well as improve the customer satisfaction and loyalty.
The other scenarios are not likely to justify substituting capital equipment in place of direct labor, because they are either irrelevant or ineffective. Material prices are forecasted to increase (B) is a factor that affects the cost of inputs, not outputs. Substituting capital equipment in place of direct labor may not reduce the material costs, unless the capital equipment can use less or cheaper materials than direct labor. Implementing a pull system in production is a method of managing inventory and production based on actual customer demand, rather than forecasts. Substituting capital equipment in place of direct labor may not facilitate the implementation of a pull system, unless the capital equipment can provide more flexibility and responsiveness than direct labor. Functional layouts are being utilized (D) is a way of arranging the production facilities according to the type of operation or function performed. Substituting capital equipment in place of direct labor may not improve the performance or efficiency of a functional layout, unless the capital equipment can reduce the setup time or transportation cost between different functions.
Make-or-Buy Decision - Definition & Examples | Marketing Tutor
Make-or-Buy Decision - Overview, How It Works, Triggers
Make or Buy Decision - Definition & Examples | Marketing Tutor
Make or Buy Decision - What Is It, Examples, Factors, Advantages

QUESTION 52
Which of the following is the fundamental difference between finite loading and other capacity planning approaches?

A. It is highly dependent on advanced computer software to function effectively.
B. It is only managed by shop floor supervisors.
C. It can use historical information to drive decision-making processes.
D. It considers adjustments to plans based on planned capacity utilization.

Correct Answer: D
Section:
Explanation:
Finite loading is a capacity planning approach that considers adjustments to plans based on planned capacity utilization. It does not allow overloading of resources and schedules operations only when there is enough capacity available. Finite loading creates a more realistic schedule for the production processes than other approaches, such as infinite loading, that ignore the capacity constraints and assume that the due dates of orders are absolute. Finite loading is not highly dependent on advanced computer software, although it can benefit from it. It is not only managed by shop floor supervisors, but also by planners and schedulers. It can use historical information, but it is not the only approach that can do so. Therefore, the fundamental difference between finite loading and other capacity planning approaches is that it considers adjustments to plans based on planned capacity utilization.Reference:= CPIM Part 2 Exam Content Manual, Domain 6: Plan, Manage, and Execute Detailed Schedules, Section B: Schedule Production Activities, Subsection 1: Develop a detailed production schedule (p. 28)

QUESTION 53
A company with stable demand that uses exponential smoothing to forecast demand would typically use a:

A. low alpha value.
B. low beta value.
C. high beta value.
D. high alpha value.

Correct Answer: A
Section:
Explanation:
Exponential smoothing is a forecasting method that assigns weights to past observations, with more recent observations having higher weights. The alpha value is the smoothing constant that determines how much weight is given to the most recent observation. A low alpha value means that the forecast is based more on the historical average, while a high alpha value means that the forecast is more responsive to the latest changes in demand. A company with stable demand would typically use a low alpha value to smooth out random fluctuations and obtain a more accurate forecast. A beta value is another smoothing constant that is used for trend-adjusted exponential smoothing, which accounts for the presence of a linear trend in the data. A low beta value means that the trend component is based more on the historical average, while a high beta value means that the trend component is more responsive to the latest changes in demand. A company with stable demand would not need to use trend-adjusted exponential smoothing, since there is no significant trend in the data.Reference:= CPIM

Part 2 Exam Content Manual, Domain 3: Plan and Manage Demand, Section C: Forecast Demand, Subsection 2: Select appropriate forecasting technique(s) (p. 16)

QUESTION 54
Which of the following conditions is required for an effective single-sourcing relationship?

A. Demand for the customer's products must be stable.
B. The supplier must offer the lowest price per unit.
C. The organizations must be mutually dependent.
D. The organizations must be located close to each other.

Correct Answer: C
Section:
Explanation:
An effective single-sourcing relationship requires that the organizations must be mutually dependent. This means that both the customer and the supplier rely on each other for their success and benefit from the partnership. Mutual dependence can foster trust, collaboration, communication, innovation, and problem-solving between the parties. It can also reduce the risks of supply disruptions, quality issues, price fluctuations, and contract breaches. Mutual dependence can be achieved by aligning the goals, values, and strategies of the organizations, as well as by sharing information, resources, and risks. Demand for the customer's products does not have to be stable for a single-sourcing relationship to work. In fact, single sourcing can help the customer cope with demand variability by ensuring a consistent supply of goods or services from the supplier. The supplier does not have to offer the lowest price per unit for a single-sourcing relationship to be effective. The customer may choose a single supplier based on other factors, such as quality, delivery, innovation, or reputation. The price per unit may not reflect the total cost of ownership, which includes other costs such as transportation, inventory, maintenance, and warranty. The organizations do not have to be located close to each other for a single-sourcing relationship to be successful. With advances in technology and logistics, distance is not a major barrier for communication and coordination between the customer and the supplier. Moreover, single sourcing can reduce the complexity of managing multiple suppliers across different locations.Reference:=What Is Single Sourcing? (Plus Benefits and 7 Examples),Single Sourcing Vs Sole Sourcing Sourcing | CIPS,What Is Single Sourcing In Procurement And Why Is It Important?

QUESTION 55
A company has prioritized customers A, B, and C, filling orders in that sequence. What are the impacts to customer service levels for customers B and C?

A. 100% service levels for B and C
B. Customer B has higher service level
C. Customer C has higher service level
D. Customer B and C have same service level

Correct Answer: B
Section:
Explanation:
A company that has prioritized customers A, B, and C, filling orders in that sequence, will have an impact on the customer service levels for customers B and C. Customer service level is the percentage of orders that are fulfilled on time and in full. The higher the customer service level, the more satisfied the customer is with the company's performance. When a company prioritizes customers based on their importance, value, or profitability, it means that it allocates its resources and capacity to serve the most preferred customers first, and then the less preferred customers later. This can result in different customer service levels for different customer segments. In this case, customer A is the most preferred customer, followed by customer B and then customer C. Therefore, customer A will receive the highest customer service level, as the company will fill its orders first and ensure that they are delivered on time and in full. Customer B will receive the second highest customer service level, as the company will fill its orders after customer A's orders are fulfilled. Customer B may experience some delays or shortages if the company runs out of resources or capacity after serving customer A. Customer C will receive the lowest customer service level, as the company will fill its orders last, after customer A's and B's orders are completed. Customer C may face longer delays or higher shortages if the company has exhausted its resources or capacity after serving customer A and B. Therefore, the impact of prioritizing customers A, B, and C is that customer B has a higher service level than customer C.Reference:=How to Prioritize Customer Requests - Gladly,Support Ticket Prioritization - 6 Best Practices to follow, [Customer Service Level: Definition & Calculation]

QUESTION 56
In a make-to-stock (MTS) environment, which of the following actions would improve the trade-off between the cost of inventory and the level of customer service?

A. Improving estimates of customer demand
B. Eliminating raw material stockouts

C. Decreasing the frozen time zone
D. Reducing manufacturing overtime

Correct Answer: A
Section:
Explanation:
In a make-to-stock (MTS) environment, improving estimates of customer demand would improve the trade-off between the cost of inventory and the level of customer service. MTS is a production strategy that manufactures products in anticipation of customer demand, based on forecasts. The main challenge of MTS is to balance the inventory costs and the customer service levels. Inventory costs include holding costs, ordering costs, and obsolescence costs. Customer service levels measure the ability to meet customer demand without delay or stockout. A trade-off exists between these two objectives, as higher inventory levels can increase customer service levels but also increase inventory costs, and vice versa.
Improving estimates of customer demand can help reduce the trade-off between inventory costs and customer service levels, as it can lead to more accurate production planning and inventory management. By forecasting demand more accurately, a company can avoid overproduction or underproduction, which can result in excess inventory or stockouts, respectively. By producing the right amount of products at the right time, a company can lower its inventory costs and increase its customer service levels.
Eliminating raw material stockouts would not improve the trade-off between inventory costs and customer service levels in a MTS environment, as it would not affect the finished goods inventory or the customer demand. Raw material stockouts are a supply issue that can disrupt the production process and cause delays or shortages in the finished goods. However, they do not directly impact the inventory costs or the customer service levels of the finished goods, which are determined by the demand forecasts and the production plans.
Decreasing the frozen time zone would not improve the trade-off between inventory costs and customer service levels in a MTS environment, as it would increase the variability and uncertainty in the production process. The frozen time zone is the period of time in which no changes can be made to the production schedule, as it is considered fixed and final. Decreasing the frozen time zone would allow more flexibility and responsiveness to changes in demand or supply, but it would also increase the risk of errors, disruptions, or inefficiencies in the production process. This could result in higher production costs, lower quality, or longer lead times, which could negatively affect the inventory costs and the customer service levels.
Reducing manufacturing overtime would not improve the trade-off between inventory costs and customer service levels in a MTS environment, as it would reduce the production capacity and output. Manufacturing overtime is a way of increasing the production capacity and output by extending the working hours of the production resources, such as labor or equipment. Reducing manufacturing overtime would lower the production costs, but it would also lower the production output. This could result in insufficient inventory to meet customer demand, which could lower the customer service levels.Reference:=Make-to-Stock (MTS) Definition,Make-to-Stock (MTS) vs Make-to-Order (MTO) | TradeGecko,Value Creation: Assessing the Cost-Service Trade-off

QUESTION 57
Which of the following tools shows process changes and random variation over time?

A. Check sheet
B. Control chart
C. Histogram
D. Pareto analysis

Correct Answer: B
Section:
Explanation:
A control chart is a tool that shows process changes and random variation over time. A control chart is a graph that plots data points over time and shows the mean and the upper and lower control limits of the process. The mean is the average value of the data, and the control limits are the boundaries of the normal variation of the process. A control chart can help monitor the stability and performance of a process by detecting any unusual or non-random patterns in the data, such as trends, cycles, or shifts. A control chart can also help identify the sources of variation in the process, whether they are common causes (inherent to the process) or special causes (external factors). A control chart can be used for both variable data (measured on a continuous scale) and attribute data (counted or categorized).
A check sheet is a tool that collects and summarizes data in a structured way. A check sheet is a simple form that records the frequency or occurrence of specific events or problems during a process. A check sheet can help organize and analyze data by showing patterns, trends, or relationships among the data. A check sheet can also help identify potential causes of problems or areas for improvement.
A histogram is a tool that displays the distribution of data in a graphical way. A histogram is a type of bar chart that shows how many times each value or range of values occurs in a data set. A histogram can help describe and compare data by showing the shape, center, spread, and variation of the distribution. A histogram can also help identify outliers, gaps, or clusters in the data.
A Pareto analysis is a tool that prioritizes problems or causes based on their frequency or impact. A Pareto analysis is based on the Pareto principle, which states that 80 percent of the effects come from 20 percent of the causes. A Pareto analysis uses a combination of a bar chart and a line graph to show the relative importance of different factors in a process. The bars represent the frequency or magnitude of each factor, and the line represents the cumulative percentage of the total effect. A Pareto analysis can help focus on the most significant problems or causes and allocate resources accordingly.

QUESTION 58

Which of the following forms of data is required for rough-cut capacity planning (RCCF)?

A. Current work in process (WIP)
B. Resource requirements plan
C. Critical work center availability
D. Work center queues

Correct Answer: C
Section:
Explanation:
Rough-cut capacity planning (RCCP) is a long-term capacity planning technique that validates the master production schedule (MPS) by comparing the required capacity and the available capacity of critical resources. Critical resources are those that have the most impact on the production process, such as machines, labor, or materials. RCCP helps to identify any potential imbalances or bottlenecks in the production system and to adjust the MPS or the resource availability accordingly.
To perform RCCP, one of the forms of data that is required is critical work center availability. A work center is a location where one or more resources perform a specific operation or a group of operations. A critical work center is a work center that has a high utilization rate, a low flexibility, or a high influence on the production output. Critical work center availability is the amount of time or capacity that a critical work center can offer for production activities. Critical work center availability can be affected by factors such as shifts, holidays, maintenance, breakdowns, or setups. RCCP uses critical work center availability to determine whether there is enough capacity to meet the planned production.
Current work in process (WIP) is not a form of data that is required for RCCP. WIP is the inventory of partially finished goods that are waiting for further processing or assembly. WIP is not relevant for RCCP, as RCCP focuses on the future demand and capacity, not the current inventory status.
Resource requirements plan is not a form of data that is required for RCCP. Resource requirements plan is the output of RCCP, not the input. Resource requirements plan is a report that shows the projected load and capacity of each critical resource over a planning horizon. Resource requirements plan can help to identify any gaps or surpluses in capacity and to take corrective actions.
Work center queues are not a form of data that is required for RCCP. Work center queues are the waiting lines of jobs or orders at a work center. Work center queues are an indicator of short-term capacity issues, such as delays, backlogs, or congestion. Work center queues are not relevant for RCCP, as RCCP focuses on the long-term capacity planning, not the short-term scheduling.

QUESTION 59
Operations strategy:

A. is a bottom-up reflection of what the whole group or business wants to do.
B. involves translating market requirements into operations decisions.
C. involves exploiting operations capabilities in the global market.
D. is a top-down activity where operations improvements cumulatively build strategy.

Correct Answer: B
Section:
Explanation:
Operations strategy is the process of aligning the operations function with the strategic goals of the organization. It involves translating market requirements into operations decisions that support the competitive priorities of the organization. Operations strategy is not a bottom-up reflection of what the whole group or business wants to do, but rather a top-down alignment of the operations function with the overall business strategy. Operations strategy is not a top-down activity where operations improvements cumulatively build strategy, but rather a deliberate and coherent plan that guides the design and management of the operations system. Operations strategy is not only about exploiting operations capabilities in the global market, but also about developing and sustaining those capabilities in response to the changing market needs.

QUESTION 60
Providing a realistic basis for setting internal performance targets can be accomplished through:

A. beta testing.
B. benchmarking.
C. breakthrough innovation.
D. best practices.

Correct Answer: B
Section:
Explanation:
Providing a realistic basis for setting internal performance targets can be accomplished through benchmarking. Benchmarking is a process of comparing one's own performance, processes, or practices with those of other organizations that are recognized as leaders or best in class in a specific area. Benchmarking can help identify gaps, strengths, weaknesses, opportunities, and threats in one's own performance, as well as learn from the experiences and successes of others. Benchmarking can also help set realistic, achievable, and challenging goals and targets for improvement, based on external standards or benchmarks. Benchmarking can be done internally (within the same organization), externally (with other organizations in the same industry or sector), or functionally (with other organizations that perform similar functions or processes).
Beta testing is not a way of providing a realistic basis for setting internal performance targets. Beta testing is a stage of product development where a sample of potential users or customers test a product or service before it is released to the general public. Beta testing can help identify and fix any bugs, errors, or issues in the product or service, as well as collect feedback and suggestions for improvement. Beta testing can also help evaluate the usability, functionality, and quality of the product or service, as well as measure customer satisfaction and loyalty. Beta testing is not related to setting internal performance targets, as it is focused on the product or service, not the organization.
Breakthrough innovation is not a way of providing a realistic basis for setting internal performance targets. Breakthrough innovation is a type of innovation that creates significant value for customers and markets by introducing new products, services, or business models that are radically different from existing ones. Breakthrough innovation can help create competitive advantage, disrupt existing markets, or create new markets. Breakthrough innovation is not related to setting internal performance targets, as it is focused on the outcome, not the process.
Best practices are not a way of providing a realistic basis for setting internal performance targets. Best practices are methods or techniques that have been proven to be effective and efficient in achieving desired results or outcomes. Best practices can be derived from one's own experience, research, or benchmarking. Best practices can help improve performance, quality, or productivity by adopting proven solutions or standards. Best practices are not related to setting internal performance targets, as they are focused on the implementation, not the measurement.

QUESTION 61
Which of the following priority rules is most consistent with the objective of meeting due dates?

A. First-come-first-served
B. Shortest processing time (SPT)
C. Fewest operations remaining
D. Slack time per operation

Correct Answer: D
Section:
Explanation:
The priority rule that is most consistent with the objective of meeting due dates is slack time per operation. Slack time per operation is a priority rule that assigns a priority index to each job based on the ratio of the remaining slack time to the remaining number of operations. Slack time is the difference between the due date and the expected completion time of a job. A lower ratio means a higher priority, as it indicates that the job has less slack time per operation and is more likely to be late. Slack time per operation is a dynamic priority rule, as it updates the priority index after each operation is completed. Slack time per operation can help minimize the number of tardy jobs and the average tardiness of jobs, as it gives preference to the jobs that are closer to their due dates and have more operations left.
First-come-first-served (FCFS) is not a priority rule that is consistent with the objective of meeting due dates. FCFS is a priority rule that processes jobs in the order of their arrival or release times. FCFS is a simple and fair rule, but it ignores the processing times and due dates of jobs. FCFS can result in poor due date performance, as it can delay urgent or short jobs behind long or non-urgent jobs.
Shortest processing time (SPT) is not a priority rule that is consistent with the objective of meeting due dates. SPT is a priority rule that processes jobs in ascending order of their processing times. SPT is an effective rule for minimizing the average flow time and work-in-process inventory of jobs, as it clears out small jobs quickly and reduces congestion in the system. However, SPT does not consider the due dates of jobs, and it can make long or urgent jobs late.
Fewest operations remaining is not a priority rule that is consistent with the objective of meeting due dates. Fewest operations remaining is a priority rule that processes jobs in ascending order of their remaining number of operations. Fewest operations remaining is a rule that can reduce the variability and complexity of jobs, as it tends to complete jobs faster and reduce their flow times. However, fewest operations remaining does not take into account the slack times or due dates of jobs, and it can make urgent or short jobs late.

QUESTION 62
When a certified supplier's delivery performance declines, a company should respond initially by:

A. tightening performance criteria for the supplier.
B. establishing a temporary buffer of finished goods inventory at the supplier.
C. communicating with the supplier to investigate the source of the problem.
D. increasing the standard lead time of the component to allow for supplier delays.

Correct Answer: C
Section:
Explanation:
When a certified supplier's delivery performance declines, a company should respond initially by communicating with the supplier to investigate the source of the problem. A certified supplier is a supplier that has met certain quality, delivery, and service standards and has been approved by the company to supply goods or services without inspection or testing. A certified supplier is expected to maintain a high level of performance and reliability, as well as to report any issues or deviations that may affect the delivery process. However, sometimes a certified supplier may experience a decline in delivery performance, which can cause delays, disruptions, or dissatisfaction for the company and its customers.
The best way to deal with a decline in delivery performance from a certified supplier is to communicate with the supplier and find out the root cause of the problem. Communication is essential for maintaining a good relationship with the supplier and for resolving any issues or conflicts that may arise. Communication can help the company and the supplier to understand each other's expectations, needs, and challenges, as well as to identify and implement corrective actions or preventive measures. Communication can also help to restore trust and confidence between the parties and to prevent further deterioration of performance.
Tightening performance criteria for the supplier is not an appropriate initial response when a certified supplier's delivery performance declines. Tightening performance criteria means imposing stricter standards or requirements on the supplier, such as reducing lead times, increasing penalties, or demanding more frequent reports. Tightening performance criteria may seem like a way of holding the supplier accountable and motivating them to improve their performance, but it can also have negative consequences. Tightening performance criteria can create more pressure and stress for the supplier, which can affect their quality, productivity, or morale. It can also damage the relationship with the supplier, as it may signal a lack of trust, respect, or cooperation from the company.
Establishing a temporary buffer of finished goods inventory at the supplier is not an effective initial response when a certified supplier's delivery performance declines. Establishing a temporary buffer of finished goods inventory means storing extra units of products at the supplier's location to compensate for any delays or shortages in delivery. Establishing a temporary buffer of finished goods inventory may seem like a way of ensuring availability and continuity of supply, but it can also have drawbacks. Establishing a temporary buffer of finished goods inventory can increase inventory costs, such as holding costs, transportation costs, or obsolescence costs. It can also reduce inventory visibility and control, as it may be difficult to track or manage the inventory at the supplier's location. Moreover, establishing a temporary buffer of finished goods inventory does not address the root cause of the decline in delivery performance, but rather masks or postpones it.
Increasing the standard lead time of the component to allow for supplier delays is not a suitable initial response when a certified supplier's delivery performance declines. Increasing the standard lead time of the component means extending the time between placing an order and receiving it from the supplier. Increasing the standard lead time of the component may seem like a way of adjusting to the decline in delivery performance and avoiding late deliveries, but it can also have disadvantages. Increasing the standard lead time of the component can reduce customer satisfaction and loyalty, as it may result in longer waiting times or missed deadlines for the customers. It can also reduce operational efficiency and flexibility, as it may limit the ability to respond to changes in demand or supply. Furthermore, increasing the standard lead time of the component does not solve the problem of the decline in delivery performance, but rather accepts or tolerates it.