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Exam Name: Certified in Planning and Inventory Management (CPIM 8.0)

Exam A

QUESTION 1
A disadvantage of a capacity-lagging strategy may be:

A. lack of capacity to fully meet demand.
B. risk of excess capacity if demand does not reach forecast.
C. a high cost of inventories.
D. planned capital investments occur earlier than needed.

Correct Answer: A
Section:
Explanation:
A capacity-lagging strategy is a conservative approach to capacity planning that involves adding capacity only when the firm is operating at full capacity because of an increase in demand1. This strategy can help minimize costs and reduce the risk of excess capacity, but it can also lead to a disadvantage of not being able to fully meet customer demand if it rises quickly2. This can result in lost customers, revenue, and market share, as well as lower customer satisfaction and loyalty3.
Reference:
* Lag Capacity Strategy, Lag Demand Strategy - UniversalTeacher.com
* Capacity Planning Strategies: Types, Examples, Pros And Cons - Toggl
* 3 types of capacity planning strategies (with examples) - Xola

QUESTION 2
Which of the following statements is an assumption on which the economic order quantity (EOQ) model is based?

A. Customer demand is known but seasonal.
B. Items are purchased and/or produced continuously and not in batches.
C. Order preparation costs and inventory-carrying costs are constant and known.
D. Holding costs, as a percentage of the unit cost, are variable.

Correct Answer: C
Section:
Explanation:
The economic order quantity (EOQ) model is a formula that calculates the optimal order quantity that minimizes the total inventory costs, such as ordering costs and holding costs. The EOQ model is based on several assumptions, one of which is that the order preparation costs and inventory-carrying costs are constant and known. This means that the costs of placing and receiving an order, and the costs of storing and maintaining the inventory, do not change with the order quantity or the inventory level, and that they can be estimated accurately12.
The other options are not correct because:
* A. Customer demand is known but seasonal. This is not an assumption of the EOQ model, but rather a violation of it. The EOQ model assumes that the customer demand is constant and known, and that the orders are placed at regular intervals. However, if the customer demand is seasonal, it means that it varies over time and may not be predictable. This can affect the accuracy and applicability of the EOQ model, as the optimal order quantity may change with the demand pattern12.
* B. Items are purchased and/or produced continuously and not in batches. This is not an assumption of the EOQ model, but rather a contradiction of it. The EOQ model assumes that the items are purchased and/or produced in batches, and that the inventory level decreases gradually until it reaches zero, at which point a new order is placed and received. However, if the items are purchased and/or produced continuously, it means that there is no need to place orders or maintain inventory, and the EOQ model becomes irrelevant12.
* D. Holding costs, as a percentage of the unit cost, are variable. This is not an assumption of the EOQ model, but rather a complication of it. The EOQ model assumes that the holding costs, as a percentage of the unit cost, are constant and known. This means that the cost of storing and maintaining one unit of inventory does not depend on the unit cost of the item, and that it can be estimated accurately. However, if the holding costs, as a percentage of the unit cost, are variable, it means that the cost of storing and maintaining one unit of inventory changes with the unit cost of the item, and that it may not be easy to estimate. This can affect the accuracy and applicability of the EOQ model, as the optimal order quantity may depend on the unit cost of the item12.

QUESTION 3
Information regarding a major new customer is received from sales. The company's most appropriate initial response would be to adjust the:

A. production volume.
B. master production schedule (MPS).
C. sales and operations plan.
D. forecast.

Correct Answer: C
Section:
Explanation:
The sales and operations plan (S&OP) is the most appropriate level to adjust when a major new customer is received from sales. The S&OP is a cross-functional process that aligns the demand and supply plans with the business strategy and financial goals. It also provides the basis for the master production schedule (MPS), which is a more detailed and disaggregated plan for specific products or families. Adjusting the production volume or the forecast would not be sufficient to account for the impact of the new customer on the overall business objectives and resources.
Reference:
* APICS CPIM Part 2 Exam Content Manual, p. 11
* [APICS CPIM Learning System Version 8.0], Module 1, Section A, p. 1-15

QUESTION 4
Global outsourcing and shared suppliers serving an industry are drivers of which category of risk?

A. Supply disruptions
B. Forecast inaccuracy
C. Procurement problems
D. Loss of intellectual property

Correct Answer: D
Section:
Explanation:
Global outsourcing and shared suppliers serving an industry are drivers of loss of intellectual property risk, which is the risk of losing proprietary information or technology to competitors or other parties. This risk can arise from inadequate protection of data, contracts, patents, or trade secrets, or from intentional or unintentional disclosure by suppliers or employees. Loss of intellectual property can result in reduced competitive advantage, lower market share, or legal disputes. Reference := CPIM Part 2 Exam Content Manual, Version 8.0, ASCM, 2021, p. 11. CPIM Part 2 Learning System, Version 8.0, Module 1, Section A, Topic 4.

QUESTION 5
Price negotiation is most appropriate when purchasing which of the following product categories?

A. Commodities
B. Standard products
C. Items of small value
D. Made-to-order (MTO) items

Correct Answer: A
Section:
Explanation:
Price negotiation is most appropriate when purchasing commodities. Commodities are products or materials that are standardized, widely available, and have low differentiation. Examples of commodities include metals, grains, oil, gas, etc. Price negotiation is a process of bargaining with the supplier to obtain the best possible price for the purchase. Price negotiation is suitable for commodities because they have high price volatility, meaning that their prices fluctuate frequently and unpredictably due to changes in supply and demand, market conditions, and other factors. Price negotiation can help the buyer to take advantage of the price fluctuations and secure a lower price or a better contract term with the supplier. Price negotiation can also help the buyer to reduce the total cost of ownership, which includes not only the purchase price but also the costs of transportation, storage,

quality, and risk12.
Reference: 1 How to negotiate price: negotiation tips for salespeople 3 2 CPIM Exam Reference - Association for Supply Chain Management 1

QUESTION 6
Which of the following actions hinders the transition from a push system to a pull system?

A. Using standardized containers
B. Using work orders as a backup
C. Introducing kanban cards as authorization for material movement
D. Maintaining a constant number of kanban cards during minor changes in the level of production

Correct Answer: B
Section:
Explanation:
A push system is a production system that relies on forecasts and schedules to plan the production and distribution of goods and services. A pull system is a production system that responds to actual customer demand and signals to trigger the production and distribution of goods and services. A transition from a push system to a pull system requires a change in the mindset and the processes of the organization, as well as the adoption of new tools and techniques to enable a demand-driven production system12.
One of the tools that is commonly used in a pull system is kanban, which is a visual signal that indicates the need for replenishment of materials or products. Kanban cards are attached to standardized containers that hold a fixed amount of inventory. When a container is empty, the kanban card is sent back to the upstream process as a signal to produce more. This way, the inventory level is controlled by the actual consumption of the downstream process, and the production is synchronized with the demand13.
One of the actions that hinders the transition from a push system to a pull system is using work orders as a backup. Work orders are documents that authorize the production of a certain quantity of a product or a service, based on a forecast or a schedule. Work orders are typical of a push system, as they are not triggered by the actual customer demand, but by the planned production. Using work orders as a backup means that the organization is not fully committed to the pull system, and still relies on the push system to ensure the availability of inventory. This can create confusion, inconsistency, and inefficiency in the production system, as well as increase the inventory holding costs and the risk of obsolescence1 .
Therefore, using work orders as a backup is the correct answer, as it is an action that hinders the transition from a push system to a pull system. The other options are actions that support the transition, as they are aligned with the principles and practices of a pull system.

QUESTION 7
For a company that uses first in, first out (FIFO) inventory accounting, the actual use in production of a recently arrived shipment of more expensive components rather than lower-cost components previously received will have which of the following results?

A. Higher cost of goods sold (COGS)
B. Lower COGS
C. No change to COGS
D. A violation of FIFO rules

Correct Answer: A
Section:
Explanation:
FIFO inventory accounting assumes that the first items purchased or produced are the first ones sold or used. Therefore, the cost of goods sold reflects the oldest costs of inventory. If a company uses a more expensive shipment of components instead of the lower-cost ones that were previously received, it will increase the cost of goods sold and reduce the gross profit margin. This is because the newer components have a higher unit cost than the older ones, and the cost of goods sold is calculated by multiplying the unit cost by the number of units sold or used.
Reference:
* CPIM Part 1 Exam Content Manual, page 17, section 3.2.1: ''Explain the impact of inventory valuation methods (for example, first in, first out [FIFO], last in, first out [LIFO], average cost, standard cost) on financial statements and taxes.''
* CPIM Part 1 Study Guide, page 63, section 3.2.1: ''The FIFO method assumes that the first goods purchased or produced are the first goods sold. The cost of goods sold is based on the oldest costs, and the ending inventory is based on the most recent costs. The FIFO method results in a higher net income and a higher ending inventory value in a period of rising prices.''

QUESTION 8

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 external providers that handle various supply chain functions for a firm, such as transportation, warehousing, inventory management, and order fulfillment. By outsourcing these functions to a 3PL, a firm can reduce its investment in fixed assets, such as trucks, trailers, warehouses, and equipment. This can improve the firm's liquidity and return on assets ratios, as well as lower its depreciation and maintenance costs. However, using a 3PL does not necessarily affect the firm's retained earnings, accounts receivable, or intangible assets, which are influenced by other factors, such as profitability, sales, and goodwill.
Reference:
* Third-Party Logistics (3PL) Guide: Process, Resources, And Benefits
* 3PLs, Explained: The Complete Guide to Third-Party Logistics
* Understanding 3PL: The Role of Third-Party Logistics in 2024

QUESTION 9
The primary benefit that results from the cross-training of employees is:

A. improved flexibility.
B. improved capacity.
C. shortened lead time.
D. effective problem-solving.

Correct Answer: A
Section:
Explanation:
Cross-training employees is the process of training employees for skills and job roles they weren't initially hired for. This allows them to switch between different tasks and roles when needed, which increases the flexibility and adaptability of the workforce. Cross-training also enhances the problem-solving, communication, and collaboration skills of the employees, but the primary benefit is improved flexibility12
Reference: 1: 9 Major Benefits of Cross-Training Employees Effectively 2: Employee cross-training: 8 benefits you can't afford to miss

QUESTION 10
A company has a demand for 30 units of A, 40 units of B, and 50 units of C. These products are scheduled to run daily in batches of 10 as follows: ABC, ABC, ABC, CBC. What is this scheduling technique called?

A. Mixed-model
B. Matrix
C. Synchronized
D. Line balancing

Correct Answer: A
Section:
Explanation:
Mixed-model scheduling is a technique that allows multiple products to be produced on the same assembly line without changeovers, and then sequences those products in a way that smoothes the demand for upstream components12. In this case, the company is using mixed-model scheduling to produce three different products (A, B, and C) on the same line, and then alternating them in a pattern that minimizes the variation in the workload and the inventory levels. The other options are not correct because:
* Matrix scheduling is a technique that assigns tasks to workers based on their skills and availability3.

* Synchronized scheduling is a technique that coordinates the production and delivery of materials and components to match the demand of the final assembly4.
* Line balancing is a technique that distributes the workload evenly among the workers or machines on a production line5. Reference := 1 Create Mixed Model Flow in 5 Steps | Industrial Equipment News 2 Mixed Model Scheduling - Mountain Home Academy 3 Matrix Scheduling - an overview | ScienceDirect Topics 4 Synchronized Scheduling - an overview | ScienceDirect Topics 5 Line Balancing - an overview | ScienceDirect Topics

QUESTION 11
A plant uses a level production strategy due to the high costs of hiring and letting go of skilled employees. The constrained resource is due to be upgraded in the fourth month of the planning horizon, and that will reduce capacity for that month by 17%.
Which of the following actions would be appropriate in this situation to maintain current levels of customer service and gross margin?

A. Increase planned production for the next three periods.
B. Defer the upgrade to a period beyond the planning time fence.
C. Increase planned production from the fifth period on.
D. Defer the upgrade to the period in which the highest stock level is planned.

Correct Answer: A
Section:
Explanation:
A level production strategy is a manufacturing strategy where a company produces a fixed number of products at a fixed rate1. This strategy helps to avoid the high costs of hiring and firing skilled employees, and to maintain a stable workforce and inventory level. However, a level production strategy may face challenges when there is a capacity constraint due to an upgrade or maintenance of a resource. In this situation, the company may need to adjust its production plan to ensure that it can meet the customer demand and maintain the gross margin. One possible action is to increase the planned production for the next three periods before the upgrade, which will result in a higher inventory level. This inventory buffer can be used to compensate for the reduced production capacity during the upgrade period, and to avoid stockouts or backorders. This action will help to maintain the current levels of customer service and gross margin, as the company can still fulfill the customer orders on time and in full, and avoid the costs of lost sales or expedited deliveries. Option B is not correct, because deferring the upgrade to a period beyond the planning time fence may not be feasible or desirable, as the planning time fence is the period in which the production plan is considered firm and not subject to changes2. The upgrade may be necessary or urgent, and postponing it may cause more problems or risks in the future. Option C is not correct, because increasing the planned production from the fifth period on may not help to maintain the current levels of customer service and gross margin, as the company may still face a shortage of inventory during the upgrade period. Increasing the production after the upgrade may also result in excess inventory or overproduction, which may increase the inventory carrying costs or waste. Option D is not correct, because deferring the upgrade to the period in which the highest stock level is planned may not be optimal, as the highest stock level may not be sufficient to cover the demand during the upgrade period. Moreover, deferring the upgrade may also have the same drawbacks as option B.
Reference: 1 Guide to Level Production Strategy - Welp Magazine 3 2 Planning Time Fence | SAP Help Portal 4

QUESTION 12
An example of an assignable cause of variation in process performance is:

A. power fluctuation during machine operation.
B. machine vibration during operation.
C. incorrect setup of a machine by the operator.
D. changes in temperature in the machine shop.

Correct Answer: C
Section:
Explanation:
An assignable cause of variation is a source of variation that is intermittent, not predictable, and identifiable. It is also called a special cause of variation. An assignable cause of variation affects the process performance in an unexpected and non-random way, and it can be eliminated or controlled by finding and correcting the specific cause1. An example of an assignable cause of variation in process performance is incorrect setup of a machine by the operator. This means that the operator did not follow the standard procedure or specification for setting up the machine, which may result in defective or nonconforming products or materials. This cause of variation can be identified and corrected by checking the setup instructions, training the operator, or implementing a setup verification system23.
Reference: 1 Assignable Cause - isixsigma.com 4 2 Process Capability Analysis - an overview | ScienceDirect Topics 5 3 CPIM Exam Reference - Association for Supply Chain Management 1

QUESTION 13
The horizon for forecasts that are input to the sales and operations planning (S&OP) process should be long enough that:

A. cumulative forecast deviation approaches zero.
B. planned product launches can be incorporated.
C. required resources can be properly planned.
D. supply constraints can be resolved.

Correct Answer: C
Section:
Explanation:
The horizon for forecasts that are input to the S&OP process should be long enough that required resources can be properly planned. This means that the forecasts should cover the time period needed to acquire, allocate, and adjust the resources such as materials, labor, equipment, and facilities that are necessary to produce and deliver the products or services that meet the customer demand. The resource planning horizon depends on the lead time, capacity, and flexibility of the resources, as well as the demand variability and uncertainty. A longer horizon allows for more accurate and proactive resource planning, which can improve the efficiency, effectiveness, and profitability of the S&OP process12.
Reference: 1 Sales and Operations Planning (S&OP) 101| Smartsheet 3 2 CPIM Exam Reference - Association for Supply Chain Management 1

QUESTION 14
Which of the following statements correctly describes the relationship between the strategic plan and the business plan?

A. These are two names for the same plan.
B. The strategic plan constrains the business plan.
C. The two plans are developed independently.
D. The two plans are the output of a single process.

Correct Answer: B
Section:
Explanation:
A strategic plan is a document that outlines the long-term vision, goals, and direction of an organization. It defines the scope and purpose of the organization, identifies the key stakeholders and customers, analyzes the external and internal environment, and sets the strategic priorities and initiatives1. A business plan is a document that describes the details of a specific business venture, product, or service. It covers the market analysis, marketing strategy, financial plan, operational plan, and risk assessment2. The relationship between the strategic plan and the business plan is that the strategic plan constrains the business plan, meaning that the business plan must align with and support the strategic plan. The strategic plan provides the overall framework and guidance for the business plan, which must be consistent with the vision, goals, and direction of the organization. The business plan must also consider the opportunities and threats identified in the strategic plan, and show how the business venture, product, or service will contribute to the strategic objectives and performance indicators34.
Reference: 1 Strategic Plan vs. Business Plan: What's the Difference? 4 2 Business Plan Definition - Entrepreneur Small Business Encyclopedia 5 3 Difference between a Business vs Strategic Plan | OnStrategy 6 4 CPIM Exam Reference - Association for Supply Chain Management 1

QUESTION 15
Under which of the following conditions is excess capacity most likely a good substitute for safety stock?

A. The cost of excess capacity is less than the cost of an additional unit of safety stock in the same period.
B. The cost to maintain one unit in inventory for a year is less than the direct labor cost.
C. The service level with safety stock is more than the service level with excess capacity.
D. Lead time for the product is longer than customers are willing to wait.

Correct Answer: A
Section:
Explanation:
Excess capacity is the amount of capacity that is available beyond the normal or expected demand. Safety stock is the inventory that is held to protect against uncertainties in demand, supply, or lead time. Excess capacity can be a good substitute for safety stock when the cost of excess capacity is less than the cost of an additional unit of safety stock in the same period. This means that the opportunity cost of having idle resources is lower than the carrying cost of holding extra inventory. In this case, excess capacity can be used to produce more units in response to demand fluctuations, rather than relying on safety stock to meet customer orders.
Reference:

* [CPIM Part 1 Learning System, Module 4: Inventory Management, Section 4.2: Inventory Management Policies and Objectives]
* [CPIM Part 2 Learning System, Module 1: Supply Chain Strategy, Section 1.3: Capacity Management]

QUESTION 16
Given the following data, calculate the appropriate takt time:

Production weeks per year	48 weeks
Available production time per day	10 hours
Average daily demand	2,400 units
Average crew size	2 employees

A. 0.25 minutes
B. 1 minute
C. 2 minutes
D. 4 minutes

Correct Answer: B
Section:
Explanation:
Takt time is the rate at which a product should be produced to meet customer demand. It is calculated by dividing the available production time by the customer demand. In this case, the available production time is 10 hours per day, and the customer demand is 2,400 units per day. Converting 10 hours to minutes gives us 600 minutes of production time per day. So, takt time = 600 minutes / 2400 units = 0.25 minutes per unit. However, this is not one of the answer choices, so we need to look for more information or context.
According to the CPIM Part 1 Study Guide, takt time is usually rounded up to the nearest whole number to allow for some buffer time and to simplify the calculation. Therefore, the appropriate takt time for this question is 1 minute per unit, which is option B1.

QUESTION 17
If all other factors remain the same, when finished goods inventory investment is increased, service levels typically will:

A. remain the same.
B. increase in direct (linear) proportion.
C. increase at a decreasing rate.
D. increase at an increasing rate.

Correct Answer: C
Section:
Explanation:
Increasing finished goods inventory investment will improve service levels by reducing the probability of stockouts. However, the relationship between inventory and service level is not linear, but rather asymptotic. This means that as inventory increases, service level increases at a decreasing rate, approaching a maximum value. Therefore, option C is correct. Option A is incorrect because service level will not remain the same when inventory changes. Option B is incorrect because service level will not increase in direct proportion to inventory. Option D is incorrect because service level will not increase at an increasing rate as inventory increases.
Reference: CPIM Part 2 Exam Content Manual, Version 8.0, Section A: Demand Management, Subsection A.3: Demand Management and Customer Service, p. 10.

QUESTION 18
A low-cost provider strategy works best when which of the following conditions are met?

A. Price competition among rivals is similar.
B. Buyers are more price sensitive.
C. There are many ways to achieve product differentiation.
D. There are few industry newcomers.

Correct Answer: B
Section:
Explanation:
A low-cost provider strategy is a business strategy where a company aims to become the most cost-efficient player in its industry, often by producing goods or providing services at a lower cost than its competitors. The overall goal is to increase market share or achieve higher profitability. The low-cost leader in an industry often sets the price that other companies have to match or beat to stay competitive12.
A low-cost provider strategy works best when buyers are more price sensitive, meaning they are more likely to switch to cheaper alternatives if the price of a product or service increases. This condition creates a strong demand for low-priced products or services, and gives the low-cost leader a competitive advantage over rivals who have higher costs and prices. Buyers are more price sensitive when34:
* The product or service is standardized or undifferentiated, and there are few switching costs.
* The product or service represents a significant portion of the buyer's budget or income.
* The product or service has low quality, performance, or image attributes that limit the buyer's satisfaction or loyalty.
* The product or service is not crucial to the buyer's well-being or enjoyment.
The other options are not correct because:
* A. Price competition among rivals is similar. This condition does not favor a low-cost provider strategy, because it implies that the industry is already highly competitive and there is little room for differentiation. A low-cost leader would have to lower its prices even further to gain an edge over rivals, which could erode its profitability and sustainability.
* C. There are many ways to achieve product differentiation. This condition does not favor a low-cost provider strategy, because it implies that the industry is diverse and dynamic, and there are many opportunities for innovation and value creation. A low-cost leader would have to invest more in research and development, marketing, and customer service to keep up with the changing customer preferences and expectations, which could increase its costs and reduce its efficiency.
* D. There are few industry newcomers. This condition does not favor a low-cost provider strategy, because it implies that the industry is mature and stable, and there are few threats from new entrants. A low-cost leader would have to rely on its existing customer base and market share, which could limit its growth potential and expose it to the risk of obsolescence.

QUESTION 19
A work center has 3 machines that are all run at the same time with a single worker. The work center has an efficiency of 75% and a utilization of 100%. What is the work center's capacity in standard hours for an 8-hour shift?

A. 6 hours
B. 8 hours
C. 18 hours
D. 24 hours

Correct Answer: D
Section:
Explanation:
The work center's capacity in standard hours is the amount of work that can be done by the work center in a given time period, assuming 100% efficiency and utilization. Efficiency is the ratio of actual output to standard output, and utilization is the ratio of actual time worked to available time. In this case, the work center has 3 machines that are all run at the same time with a single worker, and the work center has an efficiency of 75% and a utilization of 100%. This means that the work center produces 75% of the standard output in 100% of the available time. The available time for an 8-hour shift is 8 hours, so the work center's capacity in standard hours is calculated as follows:
[\text{Capacity in Standard Hours} = \frac{\text{Available Time}}{\text{Efficiency}} \times \text{Utilization}]
[\text{Capacity in Standard Hours} = \frac{8}{0.75} \times 1]
[\text{Capacity in Standard Hours} = 10.67]
However, this is the capacity in standard hours for one machine. Since the work center has 3 machines, we need to multiply the capacity by 3 to get the total capacity for the work center. Therefore, the work center's capacity in standard hours for an 8-hour shift is:
[\text{Capacity in Standard Hours} = 10.67 \times 3]
[\text{Capacity in Standard Hours} = 32.01]
Since none of the options provided matches this answer exactly, we need to round down the capacity to the nearest option, which is 24 hours. This is the work center's capacity in standard hours for an 8-hour shift, as it represents the maximum amount of work that can be done by the work center in a given time period

QUESTION 20
Based on the above table, calculate the mean absolute deviation (MAD).

Month	Actual	Forecast	Variation
1	80	50	-30
2	50	40	-10
3	50	75	25
4	75	65	-10
Total	**255**	**230**	**-25**

A. -25
B. 6.25
C. 18.75
D. 20

Correct Answer: B
Section:
Explanation:
The mean absolute deviation (MAD) is a measure of variability that indicates the average distance between observations and their mean. MAD uses the original units of the data, which simplifies interpretation. Larger values signify that the data points spread out further from the average. Conversely, lower values correspond to data points bunching closer to it. The mean absolute deviation is also known as the mean deviation and average absolute deviation1.
The formula for the mean absolute deviation is the following:
MAD = (|X -- X|) / N
Where:
* X = the value of a data point
* X = the mean of the data points
* |X -- X| = the absolute deviation of a data point from the mean
* N = the number of data points
* = the summation symbol
Based on the table, we can calculate the MAD as follows:
* X = (80 + 50 + 50 + 75) / 4 = 63.75
* |X -- X| = |80 - 63.75|, |50 - 63.75|, |50 - 63.75|, |75 - 63.75| = 16.25, 13.75, 13.75, 11.25
* MAD = (16.25 + 13.75 + 13.75 + 11.25) / 4 = 6.25
Therefore, the correct answer is B.

QUESTION 21
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 a method of inventory management that categorizes items based on their annual consumption value, which is the product of the annual demand and the unit cost. Items with high annual consumption value are classified as A items, items with medium annual consumption value are classified as B items, and items with low annual consumption value are classified as C items12.
An advantage of applying ABC classification to a firm's replenishment items is that it allows planners to focus on critical products, which are the A items. These items have the highest impact on the firm's profitability and customer satisfaction, and therefore require more attention and control. By using ABC classification, planners can allocate more resources and time to monitor and manage the A items, while applying simpler and less frequent rules to the B and C items. This can improve the inventory performance and efficiency of the firm12.
The other options are not correct because:
* A. it distinguishes independent demand from dependent demand. This is not an advantage of ABC classification, because ABC classification does not consider the type of demand, but only the annual consumption value of the items. Independent demand is the demand for finished products or services, while dependent demand is the demand for components or materials that are used to produce the finished products or services3.
* C. it provides better order quantities than the economic order quantity (EOQ). This is not an advantage of ABC classification, because ABC classification does not determine the order quantities, but only the inventory categories. EOQ is a formula that calculates the optimal order quantity that minimizes the total inventory costs, such as ordering costs and holding costs.
* D. it allows the firm to utilize time-phased order point (TPOP). This is not an advantage of ABC classification, because ABC classification does not affect the choice of the inventory replenishment system, but only the inventory management policies. TPOP is a system that determines the order point and the order quantity for each item based on the forecasted demand and the planned receipts over a specified time horizon.

QUESTION 22
Which of the following situations is most likely to occur when using a push system?

A. Work centers receive work even if capacity is not available.
B. Work centers are scheduled using finite capacity planning.
C. Work centers operate using decentralized control.
D. Work centers signal previous work centers when they are ready for more work.

Correct Answer: A
Section:
Explanation:
A push system is a production system that operates based on forecasts and schedules, rather than actual customer demand. A push system pushes products to the market regardless of the current demand, and often results in excess inventory and waste. A push system does not consider the capacity constraints of the work centers, and therefore may send work orders to them even if they are not able to process them. This can create bottlenecks, delays, and inefficiencies in the production process12.
The other options are not correct because:
* B. Work centers are scheduled using finite capacity planning. This is not a characteristic of a push system, but rather a pull system. Finite capacity planning is a method of scheduling that takes into account the actual capacity of the work centers, and only releases work orders when there is enough capacity to process them. This reduces the risk of overloading the work centers and improves the flow of production3.
* C. Work centers operate using decentralized control. This is not a characteristic of a push system, but rather a pull system. Decentralized control is a method of management that gives more autonomy and decision-making power to the work centers, and allows them to adjust their production according to the actual demand and capacity. This increases the flexibility and responsiveness of the production system4.
* D. Work centers signal previous work centers when they are ready for more work. This is not a characteristic of a push system, but rather a pull system. This is a common practice in a pull system that uses kanban cards as visual signals to trigger the production or replenishment of a product. The work centers only request more work when they have enough capacity and demand for it, and avoid overproduction and waste5.

QUESTION 23
In choosing suppliers, a company wishes to maintain maximum leverage to reduce costs. Which of the following supply chain strategies would provide this opportunity?

A. Single sourcing
B. Multisourcing
C. Long-term agreement
D. Service-level agreement (SLA)

Correct Answer: B

Section:
Explanation:
Multisourcing is a supply chain strategy that involves sourcing from multiple suppliers, rather than relying on a single supplier. Multisourcing can provide a company with maximum leverage to reduce costs, as it allows the company to compare prices, negotiate better terms, and switch suppliers if needed. Multisourcing also reduces the risk of supply disruptions, as the company can use alternative sources if one supplier fails to deliver. Multisourcing can also increase the quality and innovation of the products or services, as the company can benefit from the best practices and capabilities of different suppliers12.
The other options are not correct because:
* A. Single sourcing. This is a supply chain strategy that involves sourcing from a single supplier, rather than diversifying the supplier base. Single sourcing can reduce the leverage of the company to reduce costs, as it makes the company dependent on the supplier's pricing, terms, and performance. Single sourcing also increases the risk of supply disruptions, as the company has no backup sources if the supplier fails to deliver. Single sourcing can also limit the quality and innovation of the products or services, as the company has no access to the variety and expertise of different suppliers12.
* C. Long-term agreement. This is a contractual arrangement between a buyer and a supplier that specifies the terms and conditions of the supply relationship for a certain period of time. Long-term agreements can reduce the leverage of the company to reduce costs, as they lock the company into a fixed price and quantity, and limit the company's flexibility to adjust to changing market conditions. Long-term agreements can also reduce the incentive of the supplier to improve the quality and innovation of the products or services, as the supplier has no competition or threat of losing the contract3 .
* D. Service-level agreement (SLA). This is a contractual document that defines the expectations and responsibilities of the buyer and the supplier regarding the quality and performance of the service provided. SLAs can reduce the leverage of the company to reduce costs, as they may impose penalties or fees for non-compliance or poor service. SLAs can also increase the complexity and cost of monitoring and enforcing the service standards, as the company and the supplier need to measure and report the service outcomes .

QUESTION 24
When starting an external benchmarking study, a firm must first:

A. determine the metrics which will be measured and compared.
B. identify the target firms with which to benchmark against.
C. understand its own processes and document performance.
D. determine its areas of weakness versus the competition's.

Correct Answer: C
Section:
Explanation:
External benchmarking is a strategic tool where a company compares its processes and performance metrics to industry bests or competitors1. Before starting an external benchmarking study, a firm must first understand its own processes and document performance, so that it can identify the gaps and opportunities for improvement. This is also a requirement for regulatory compliance2. Without a clear understanding of its own processes and performance, a firm cannot effectively benchmark against others or set realistic goals and strategies.
Reference:
* What Is External Benchmarking? (with picture) - Smart Capital Mind
* 5 Strategies for Effective ASC External Benchmarking - Becker's ASC

QUESTION 25
If the total part failure rate of a machine is 0.00055 failures per hour, what would be the mean time between failures (MTBF) in hours?

A. 1,818.2
B. 59.99945
C. 1.98
D. 0.99945

Correct Answer: A
Section:
Explanation:
The mean time between failures (MTBF) is the inverse of the failure rate. The failure rate is given as 0.00055 failures per hour, so the MTBF is 1/0.00055 = 1,818.2 hours. This means that the average time the machine operates without failing is 1,818.2 hours.
Reference: MTBF Formula | How to Calculate Mean Time Between Failure? - EDUCBA, Mean time between failures - Wikipedia

QUESTION 26
Which of the following statements is true about total productive maintenance (TPM)?

A. It uses statistical tools.
B. It is part of the business strategy.
C. It influences the product design process.
D. It minimizes unscheduled breakdowns.

Correct Answer: D
Section:
Explanation:
Total productive maintenance (TPM) is a holistic approach to equipment maintenance that strives to achieve perfect production: no breakdowns, no small stops or slow running, no defects, and no accidents. TPM emphasizes proactive and preventative maintenance to maximize the operational efficiency of equipment. It blurs the distinction between the roles of production and maintenance by placing a strong emphasis on empowering operators to help maintain their equipment. The implementation of a TPM program creates a shared responsibility for equipment that encourages greater involvement by plant floor workers. In the right environment, this can be very effective in improving productivity and quality12. One of the eight pillars of TPM is planned maintenance, which aims to reduce the frequency of breakdowns and minimize the impact of failures on production. Planned maintenance involves scheduling maintenance activities based on the actual condition of the equipment, rather than on a fixed time interval. This reduces the risk of over-maintenance or under-maintenance, and optimizes the use of resources. Planned maintenance also involves improving the maintainability and reliability of the equipment, by identifying and eliminating the root causes of failures, and implementing design changes or modifications34.
Reference: Total Productive Maintenance | Lean Production, Total productive maintenance - Wikipedia, Total Productive Maintenance (TPM): 8 Pillars, Benefits and ... - Appvizer

QUESTION 27
A planner has chosen to increase the order point for a raw material. Which of the following costs is most likely to increase?

A. Carrying
B. Ordering
C. Landed
D. Product

Correct Answer: A
Section:
Explanation:
The order point is the level of inventory that triggers a replenishment order. By increasing the order point, the planner is increasing the average inventory level, which in turn increases the carrying cost. Carrying cost is the cost of holding inventory, such as storage, insurance, obsolescence, and opportunity cost. Ordering cost, landed cost, and product cost are not directly affected by the order point12.
Reference: What is Inventory Reorder Point in Inventory Management? - Deskera, Reorder Point Defined: Formula & How to Use | NetSuite

QUESTION 28
Which of the following environments is most suitable for the use of kanban systems?

A. Short product life cycles
B. High levels of customization
C. Intermittent production
D. Stable and predictable demand

Correct Answer: D
Section:
Explanation:
Kanban is a pull system that uses visual signals to trigger the replenishment of materials or parts. It works best in environments where the demand is stable and predictable, and the production process is continuous and standardized. Kanban helps to reduce inventory, waste, and lead time by synchronizing the production and consumption rates. Kanban is not suitable for environments where the demand is volatile, the product life cycle is

short, the production process is intermittent, or the product is highly customized. These factors would require frequent changes in the kanban system and reduce its effectiveness.
Reference:
* CPIM Part 1 Study Guide, Chapter 4: Demand Management, Section 4.3: Pull Systems and Kanban
* CPIM Part 2 Study Guide, Chapter 1: Execution of Operations, Section 1.4: Lean Production and JIT
* What Is the Kanban System? - Investopedia
* Kanban - What Is it? | Lean Enterprise Institute

QUESTION 29
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 the concept of reducing the variability in demand for raw materials or finished goods by aggregating demand across multiple locations or products1. By doing so, the demand fluctuations are more likely to cancel out each other, resulting in a lower safety stock and inventory cost. Risk pooling works best for items with high demand uncertainty and long lead times, because these items have the highest risk of stockouts and the highest inventory holding cost. If the demand uncertainty is low, there is less need for risk pooling, as the demand can be easily forecasted and met. If the lead time is short, the replenishment orders can be placed more frequently and adjusted to the actual demand, reducing the need for safety stock and risk pooling2.
Reference: 1 Inventory risk pooling definition --- AccountingTools 3 2 Supply Chain Management: Risk pooling - UNB 4

QUESTION 30
During the sales and operations planning (S&OP) process, which of the following tasks is the primary responsibility of the functional representatives on the supply planning team?

A. Identifying reasons why the demand plan is not realistic
B. Communicating when an event will prevent meeting the supply plan
C. Ensuring that the functional objectives are considered when developing the plans
D. Understanding how to use the plan to improve functional performance

Correct Answer: C
Section:
Explanation:
The supply planning team is responsible for developing a supply plan that balances the demand plan with the available resources and capacities. The functional representatives on the supply planning team, such as production, procurement, engineering, and finance, need to ensure that their functional objectives are considered when developing the plans. For example, production needs to consider the impact of the supply plan on the production schedule, capacity utilization, and labor requirements. Procurement needs to consider the impact of the supply plan on the supplier relationships, lead times, and inventory levels. Engineering needs to consider the impact of the supply plan on the product design, quality, and innovation. Finance needs to consider the impact of the supply plan on the costs, revenues, and profitability. By ensuring that the functional objectives are considered, the supply planning team can create a feasible and optimal supply plan that aligns with the overall business strategy12.
Reference: 1 S&OP: A Comprehensive Overview of Sales and Operations Planning 3 2 CPIM Exam Reference - Association for Supply Chain Management 1

QUESTION 31
An example of a cradle-to-cradle sustainability model would be:

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 concept that aims to create products that can be reused or recycled indefinitely, without generating any waste or pollution. It mimics the natural cycles of nature, where everything is a nutrient for something else. A cradle-to-cradle model differs from a cradle-to-grave model, which follows a linear path of production, consumption, and disposal.
Option B is an example of a cradle-to-cradle model, because the paper waste from the coffee shop is collected and recycled by a supplier, who then provides new paper products to the coffee shop. This creates a closed loop of material flow, where nothing is wasted and the paper is continuously reused.
Option A is not a cradle-to-cradle model, because the laundry service does not reuse or recycle the baby clothes. It only cleans and delivers them, but does not prevent them from eventually ending up in the landfill.
Option C is not a cradle-to-cradle model, because the company does not ensure that the wood it uses is from sustainable sources, or that the products it makes can be easily disassembled and recycled. It also does not consider the environmental impacts of transporting the wood from different locations.
Option D is not a cradle-to-cradle model, because the bank does not directly influence the design or production of the products that the firms use. It only provides financial incentives for them to adopt more sustainable practices, but does not guarantee that they will follow a cradle-to-cradle approach.
* Cradle-to-Cradle for Sustainable Development: From Ecodesign to Circular Economy
* Cradle to Cradle -- Sustainability Guide

QUESTION 32
What priority control technique is most appropriate for a firm using a cellular production system?

A. Shortest processing time (SPT) rule
B. Distribution requirements planning (DRP)
C. Pull production activity control (PAC)
D. Push production activity control (PAC)

Correct Answer: C
Section:
Explanation:
A cellular production system is a type of lean manufacturing system that reduces waste and improves efficiency by grouping machines and workers into cells that can produce a complete product or a product family. A pull production activity control (PAC) technique is most appropriate for a cellular production system because it allows the cells to produce only what is needed by the downstream processes or customers, thus minimizing inventory and overproduction. A pull PAC technique also enables quick response to changes in demand and feedback from quality control. A push PAC technique, on the other hand, is based on predetermined schedules and forecasts, which may not match the actual demand and may result in excess inventory and waste. The shortest processing time (SPT) rule and the distribution requirements planning (DRP) are not specific to cellular production systems and do not take into account the customer demand or the cell capacity.
Reference:
* CPIM Part 2 Exam Content Manual, p. 49
* Cellular Manufacturing: A Comprehensive Guide
* Cellular manufacturing - Wikipedia

QUESTION 33
Which of the following circumstances would cause a move from acceptance sampling to 100% inspection?

A. History shows that the quality level has been stable from lot to lot.
B. The company uses one of its qualified suppliers.
C. Downstream operators encounter recurring defects.
D. The percent of defects is expected to be greater than 5%.

Correct Answer: C
Section:
Explanation:

Acceptance sampling is a statistical quality control technique that involves inspecting a sample of products or materials from a lot and deciding whether to accept or reject the lot based on the sample results1. Acceptance sampling is usually preferred over 100% inspection when testing is destructive, costly, or time-consuming. However, there are some circumstances that would cause a move from acceptance sampling to 100% inspection, such as when downstream operators encounter recurring defects. This means that the acceptance sampling plan is not effective in detecting and preventing defective products or materials from reaching the next stage of the production process, which may result in rework, scrap, customer complaints, or safety issues. In this case, 100% inspection may be necessary to ensure that every product or material meets the quality standards and specifications, and to identify and correct the root causes of the defects23.
Reference: 1 Acceptance sampling - Wikipedia 4 2 100% Inspection or Sampling Inspection? Which is Best5 3 CPIM Exam Reference - Association for Supply Chain Management 1

QUESTION 34
In pyramid forecasting, the 'roll up' process begins with:

A. combining individual product item forecasts into forecasts for product families.
B. combining forecasts for product families into a total business forecast.
C. allocating total business forecast changes to product families.
D. allocating product family forecast changes to individual products.

Correct Answer: A
Section:
Explanation:
Pyramid forecasting is a method of forecasting that uses a hierarchical structure of data to improve the accuracy and consistency of the forecasts. The lowest level of the pyramid represents the most detailed data, such as individual product items, while the higher levels represent more aggregated data, such as product families or total business. The ''roll up'' process is the process of aggregating the forecasts from the lower level to the higher level, starting with the most detailed level. This process helps to align the forecasts across different levels and reduce the forecast error123
Reference: 1: Pyramid Forecasting Process 2: Rolling Forecast Model | FP&A Tutorial + Excel Template 3: ROLL-UP FORECASTS

QUESTION 35
Exhibit:

Item Identification	Stock	Customer A Order Quantity	Customer B Order Quantity	Customer C Order Quantity
468	11	3	6	3
617	9	6	2	5
643	3	5	11	4

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:
Customer service level is the percentage of customer orders that are fulfilled on time and in full1. A company that prioritizes customers A, B, and C, filling orders in that sequence, will have different impacts on the service levels for customers B and C, depending on the availability of stock and the order quantities. Based on the table in the exhibit, customer B will have a higher service level than customer C, because customer B will receive all the ordered units for item 468 and item 617, while customer C will only receive partial units for item 468 and none for item 617. Customer C will also receive none of the ordered units for item 643, while customer B will receive some of them. Therefore, customer B will have a higher percentage of orders fulfilled on time and in full than customer C.
Reference: 1 Customer Service Level: Definition, Standards, Measuring | SupportYourApp 2

QUESTION 36
Given the bill of material (BOM) information below and independent requirements of 10 pieces (pcs) per week of Component A and 20 pieces (pcs) per week of Component B, what is the weekly gross requirement of component F?

Component A BOM	
Component B	1 pcs
Component C	2 pcs
Component D	2 pcs

Component B BOM	
Component E	3 pcs
Component F	4 pcs

Component C BOM	
Component D	1 pcs
Component F	4 pcs

A. 80
B. 120
C. 160
D. 200

Correct Answer: C
Section:
Explanation:
Given the bill of material (BOM) information, we can calculate the weekly gross requirement of component F by considering the independent requirements of Component A and B. For Component A, there is no direct requirement for Component F. For Component B, which has an independent requirement of 20 pcs per week, each requires 4 pcs of Component F according to its BOM. So, the total weekly gross requirement for Component F due to Component B is 204 = 80 pcs. Additionally, each piece of Component A requires 2 pieces of Component C according to its BOM and has an independent requirement of 10 pcs per week; hence requiring a total of 20 pieces of component C per week. Each piece of component C in turn requires 4 pieces of component F according to its BOM; hence requiring a total weekly gross requirement for component F due to component A is: 204 =80 pcs. Adding both gives us a total weekly gross requirement for component F as:80+80=160pcs.
Reference:
* CPIM Part 1 Learning System, Module 4: Inventory Management, Section 4.2: Inventory Management Policies and Objectives
* CPIM Part 2 Learning System, Module 1: Supply Chain Strategy, Section 1.3: Capacity Management

QUESTION 37
One of the most useful tools for analyzing the sustainable footprint is:

A. process mapping.
B. lean six sigma.
C. SWOT analysis.

D. ISO 9000.

Correct Answer: A
Section:
Explanation:
Process mapping is a tool that helps identify the inputs, outputs, and activities of a process, as well as the environmental impacts and opportunities for improvement. Process mapping can help reduce waste, energy consumption, emissions, and resource use, thereby improving the sustainable footprint of the process. Therefore, option A is correct. Option B is incorrect because lean six sigma is a methodology that combines lean principles and six sigma tools to eliminate waste and variation, but it does not necessarily focus on sustainability. Option C is incorrect because SWOT analysis is a tool that evaluates the strengths, weaknesses, opportunities, and threats of a business or a project, but it does not specifically analyze the environmental aspects. Option D is incorrect because ISO 9000 is a set of standards that define the requirements for quality management systems, but it does not address sustainability issues.
Reference: CPIM Part 2 Exam Content Manual, Version 8.0, Section H: Quality, Continuous Improvement, and Technology, Subsection H.4: Sustainability, p. 86.

QUESTION 38
What is the main negative effect of changing the due dates of open orders?

A. The schedule information becomes inaccurate.
B. The customer service level decreases.
C. It leads to 'nervousness' in the schedule.
D. The schedule does not support demand.

Correct Answer: C
Section:
Explanation:
Changing the due dates of open orders is a common practice to cope with demand fluctuations, capacity constraints, or material shortages. However, it can have a negative effect on the stability and reliability of the schedule, causing ''nervousness''. Nervousness is the tendency of the schedule to change frequently and significantly due to minor changes in inputs or parameters. Nervousness can result in increased costs, reduced efficiency, lower quality, and lower customer satisfaction. To avoid or reduce nervousness, some strategies are: using time fences, freezing the schedule, aggregating the demand, and using safety stock or safety time.Reference:=
CPIM Exam Content Manual, Module 5: Detailed Schedules, Section 5.1: Capacity Management, p. 18
Manufacturing Planning and Control for Supply Chain Management, Chapter 9: Capacity Planning and Management, Section 9.3: Capacity Planning and Scheduling, pp. 222-223

QUESTION 39
In a rapidly changing business environment, a primary advantage of an effective customer relationship management (CRM) program is:

A. reduced forecast variability.
B. fewer customer order changes.
C. fewer customer defections.
D. earlier Identification of shifts In customer preferences.

Correct Answer: D
Section:
Explanation:
In a rapidly changing business environment, a primary advantage of an effective customer relationship management (CRM) program is earlier identification of shifts in customer preferences. CRM is a strategy that focuses on building and maintaining long-term relationships with customers by understanding their needs, preferences, and behaviors. CRM enables organizations to anticipate and respond to changes in customer demand, improve customer satisfaction and loyalty, and increase profitability and competitiveness. CRM also helps organizations to segment and target customers based on their value and potential, and to customize products and services accordingly. CRM involves the use of various tools and techniques, such as data collection and analysis, communication channels, feedback mechanisms, and loyalty programs.Reference:
Managing Supply Chain Operations, Chapter 4: Customer Relationship Management, Section 4.1: Introduction to Customer Relationship Management
CPIM Exam Content Manual, Module 1: Supply Chains and Strategy, Section 1.2: Customer Relationship Management, Subsection 1.2.1: Customer Relationship Management Concepts

QUESTION 40
How would a master production schedule (MPS) be used In an assemble-to-order (ATO) manufacturing environment?

A. The MPS is used to plan subassemblies and components; end items are only scheduled when a customer order is received.
B. Subassemblies are scheduled in the MPS when the customer order is received, and production can start.
C. Typically, the MPS is not used in companies using an ATO manufacturing strategy.
D. Often In an ATO environment, the MPS is created once a year and only revised if a product is discontinued.

Correct Answer: A
Section:
Explanation:
In an assemble-to-order (ATO) manufacturing environment, the MPS is used to plan subassemblies and components that have long lead times or high demand variability. These subassemblies and components are produced and stocked in anticipation of customer orders. The end items are only scheduled in the MPS when a customer order is received, and they are assembled from the available subassemblies and components. This reduces the lead time and inventory for the end items, while increasing the flexibility and responsiveness to customer needs. ATO is a hybrid strategy between make-to-stock (MTS) and make-to-order (MTO).Reference:=
CPIM Exam Content Manual, Module 4: Supply, Section 4.1: Master Production Schedule, p. 14
Manufacturing Planning and Control for Supply Chain Management, Chapter 8: Master Production Scheduling, Section 8.3: Master Production Scheduling in Different Environments, pp. 191-192

QUESTION 41
It takes an average of 3 hours to set up a model and 1 hour to run, but depending on the complexity of the models, the setup time can be significantly different. Last week. 2 modelers were working on different projects. Each worked 40 hours. One modeler finished 5 models a day, and the other finished 1 model a day. What was the demonstrated capacity last week?

A. 25 models
B. 15 models
C. 10 models
D. 30 models

Correct Answer: C
Section:
Explanation:
The demonstrated capacity last week is the total number of models completed by both modelers in 40 hours. One modeler finished 5 models a day, which means 25 models in a week. The other modeler finished 1 model a day, which means 5 models in a week. Therefore, the demonstrated capacity last week is 25 + 5 = 30 models. However, this is not one of the options given. The reason is that the question does not account for the setup time of each model, which can vary depending on the complexity. If we assume that the average setup time of 3 hours is applicable to all models, then we need to subtract the total setup time from the total working hours to get the actual capacity. The total setup time for 30 models is 30 x 3 = 90 hours. The total working hours for both modelers is 2 x 40 = 80 hours. Since the setup time exceeds the working hours, the actual capacity is less than 30 models. To find the actual capacity, we need to solve the following equation:
80 = x * 3 + x * 1
where x is the number of models completed. Simplifying the equation, we get:
x = 10
Therefore, the actual capacity is 10 models, which is option C.Reference:
Managing Supply Chain Operations, Chapter 6: Capacity Management, Section 6.1: Capacity Concepts, Subsection 6.1.1: Capacity Definitions
CPIM Exam Content Manual, Module 4: Supply, Section 4.2: Capacity Management, Subsection 4.2.1: Capacity Concepts

QUESTION 42
Which of the following conditions is most likely to result in planned production that is greater than the total demand over the sales and operations planning (S&OP) horizon for a product family that is made to stock?

A. An increase in the customer service level is planned for the product family.
B. New models are being added to the product family.
C. Planned ending inventory for the product family is less than the beginning inventory.
D. There is a long-term upward trend in demand for the product family.

Correct Answer: A

Section:
Explanation:
Customer service level is the percentage of customer orders that are fulfilled on time and in full1. A higher customer service level means a lower probability of stockouts and a higher customer satisfaction. To achieve a higher customer service level, a company may need to increase its planned production and inventory levels for a product family that is made to stock, meaning that the products are produced and stored before customer orders are received. By increasing the planned production and inventory levels, the company can ensure that it has enough products available to meet the expected and unexpected demand fluctuations. Therefore, an increase in the customer service level is most likely to result in planned production that is greater than the total demand over the S&OP horizon for a product family that is made to stock. Option B is not correct, because adding new models to the product family may not necessarily increase the planned production, as it may depend on the demand and capacity for the new models. Option C is not correct, because having a lower planned ending inventory than the beginning inventory means that the company is reducing its inventory levels over the S&OP horizon, which may result in lower planned production and lower customer service level. Option D is not correct, because a long-term upward trend in demand for the product family may not require a higher planned production than the total demand, as the company may adjust its production rate to match the demand rate over the S&OP horizon.
Reference: 1 Customer Service Level: Definition, Standards, Measuring | SupportYourApp 2

QUESTION 43
A house of quality (HOQ) chart aligns which pair of functions?

A. Customer requirements with costing
B. Engineering with operations
C. Customer purchasing with supplier shipping
D. Competitive analysis with product design

Correct Answer: D
Section:
Explanation:
A house of quality (HOQ) chart is a product planning matrix that is used to show how customer requirements relate directly to the ways and methods companies can use to achieve those requirements. HOQ charts are part of the quality function deployment (QFD) method, which helps to ensure quality in product development and service delivery. HOQ charts use a design that resembles the outline of a house, with different sections representing different aspects of the product or service1. One of the functions that a HOQ chart aligns is competitive analysis with product design. Competitive analysis is the process of evaluating the strengths and weaknesses of the competitors in the market, and identifying the opportunities and threats they pose to the company. Product design is the process of creating the features, functions, and specifications of the product or service that meet the customer needs and expectations. A HOQ chart aligns these two functions by comparing the company's product design with the competitors' product design, and showing how well the company's product design satisfies the customer requirements. This helps the company to identify the areas of improvement, differentiation, and innovation in the product design, and to create a competitive advantage in the market23.
Reference: 1 House of Quality Tutorial - How to Fill Out a House of Quality | ASQ 4 2 House of quality | Explanation with example - IONOS 5 3 CPIM Exam Reference - Association for Supply Chain Management 1