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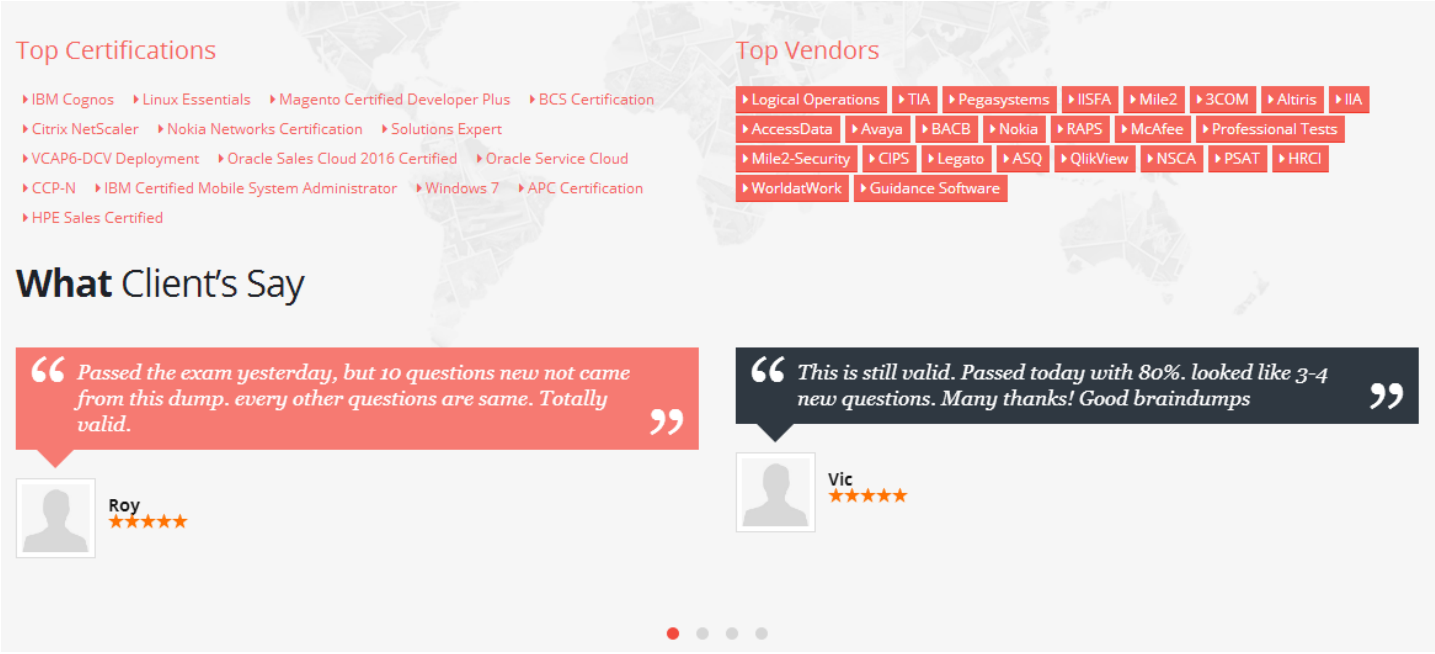

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Exam : **CPIM-Part-2**

Title : Certified in Planning and Inventory Management(Part 2)

Vendor : APICS

Version : DEMO

NO.1 The planned channels of inventory disbursement from one or more sources to field warehouses are known as:

A. Asupply chain community.

B. interplant demand.

C. a bill of distribution.

D. logistics data interchange (LDI).

Answer: C

Explanation

A bill of distribution is a document that specifies the planned channels of inventory disbursement from one or more sources to field warehouses. A bill of distribution is similar to a bill of materials, but it applies to the distribution stage rather than the production stage. A bill of distribution helps to optimize the inventory level, reduce transportation costs, and improve customer service. A bill of distribution considers the factors such as demand patterns, lead times, costs, and capacities of the sources and warehouses.

The other options are not documents that specify the planned channels of inventory disbursement from one or more sources to field warehouses. A supply chain community is a network of organizations that collaborate and coordinate their activities to deliver products or services to customers. A supply chain community includes suppliers, manufacturers, distributors, retailers, and customers. A supply chain community helps to improve the visibility, efficiency, and responsiveness of the supply chain. Interplant demand is the demand for a product or component that is generated by another plant within the same organization. Interplant demand is usually transferred through internal orders or shipments. Interplant demand helps to balance the capacity and resources among different plants. Logistics data interchange (LDI) is a system that enables the exchange of information and documents among different parties involved in the logistics process. LDI uses electronic data interchange (EDI) or other technologies to transmit data such as orders, invoices, shipment notices, and tracking information. LDI helps to improve the accuracy, speed, and security of the logistics transactions. References: CPIM Exam Content Manual Version 7.0, Domain 7: Plan and Manage Distribution, Section 7.1: Distribution Planning Concepts, p. 40; Bill of Distribution; Supply Chain Community.

NO.2 Which of the following activities would be effective to mitigate the bullwhip effect?

A. Implement track and trace technology.

B. Use a push system.

C. Reduce lead times.

D. Increase inventory.

Answer: C

Explanation

The bullwhip effect is a supply chain phenomenon that causes fluctuations in demand to amplify as they move upstream, from the consumer to the retailer, to the distributor and then to the producer1. The bullwhip effect can result in inefficiencies and costs such as excess inventory, lost revenues, superfluous capacity and poor customer service1.

One of the activities that would be effective to mitigate the bullwhip effect is to reduce lead times, which are the time intervals between placing an order and receiving the goods2. Reducing lead times can help to reduce the uncertainty and variability in demand, as well as improve the responsiveness and flexibility of the supply chain2. By reducing lead times, the supply chain partners can order less

frequently and in smaller quantities, while still meeting customer demand. This can reduce the need for safety stock, cycle stock and pipeline stock, and thus lower the inventory carrying costs and risks2. The other options are not effective activities to mitigate the bullwhip effect. Implementing track and trace technology, which is a method for tracking the origin, history, location and status of a product or its parts throughout the supply chain3, may help to improve the visibility and transparency of the supply chain, but it may not reduce the demand fluctuations or inventory imbalances caused by the bullwhip effect. Using a push system, which is a production system where goods are produced based on forecasted demand rather than actual customer orders4, may increase the risk of overproduction or underproduction, as well as create more inventory and waste in the supply chain. Increasing inventory, which is the stock of goods or materials held by a company to meet customer demand5, may increase the inventory carrying costs and risks, as well as tie up cash flow and working capital. References : Lead Time Reduction: Definition & Benefits; The bullwhip effect: causes, intensity, and mitigation - Academia.edu; What is Traceability in Supply Chain Management?; Push vs Pull System: What Is The Difference?; Inventory Definition.

NO.3 What is the shortest manufacturing lead time required for 10 units of Item A assuming that it must complete Operations10,20, 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

Answer: B

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.
References : Manufacturing Lead Time; How to Calculate and Reduce Lead Time; How To Calculate Lead Time?; What Is Lead Time? How to Calculate Lead Time in Different Industries.

NO.4 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.
Answer: C
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. References: CPIM Part 2 Exam Content Manual, Domain 7: Plan and Manage Distribution, Section 7.1:
Distribution Network Design, p. 38.

NO.5 A 58 environment should be maintained for which of the following reasons?
A. To prepare for customer visits
B. To support standard work
C. To promote level loading
D. To standardize training
Answer: B

Explanation
A 5S environment is a type of workplace organization method that uses a list of five Japanese words: seiri (sort), seiton (set in order), seiso (shine), seiketsu (standardize), and shitsuke (sustain). The goal of 5S is to create a clean, uncluttered, safe, and well organized workplace that helps reduce waste and optimize productivity. A 5S environment should be maintained for the following reason:
To support standard work: Standard work is a set of documented procedures that define the best way to perform a task or process. Standard work helps to ensure quality, efficiency, safety, and consistency. A
5S environment supports standard work by providing a clear and visible layout of the work area, tools, materials, and instructions. A 5S environment also helps to maintain the condition and performance of the equipment and facilities. A 5S environment enables workers to follow standard work easily and effectively.
References: 5S - What are The Five S's of Lean? | ASQ; 5S (methodology) - Wikipedia.

NO.6 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

Answer: C

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 theinventory cost, depending on the degree of adjustment and constancy. A hybrid strategy also requires more trade-offs and compromises in production decision making.
References:
APICS Exam Handbook, page 12
CPIM Part 1 Study Guide, page 19
CPIM Part 2 Study Guide, page 17

NO.7 Sales and operations planning (S&0P) in a make-to-stock (MTS) environment is concerned withprojecting:

A. item forecasts.

B. inventory.

C. backlog.

D. bookings.

Answer: B

Explanation

Sales and operations planning (S&OP) in a make-to-stock (MTS) environment is concerned with projecting inventory. S&OP is an integrated planning process that aligns demand, supply, and financial planning and is managed as part of a company's master planning1. MTS is a traditional production strategy that is used by businesses to match inventory with anticipated consumer demand2. Inventory is the quantity and value of materials and products that are available in stock or in transit3.

S&OP in an MTS environment is concerned with projecting inventory because inventory is the key link between demand and supply. Inventory can be classified into three types: raw materials, work-in-process, and finished goods3. S&OP aims to balance the inventory levels of these types with the expected demand and supply plans, as well as the financial objectives of the company. S&OP can help optimize inventory management by:

Reducing inventory costs, such as holding, ordering, and shortage costs3.

Improving inventory turnover, which is the ratio of sales to average inventory3.

Increasing inventory availability, which is the percentage of orders that can be fulfilled from stock3.

Enhancing inventory quality, which is the degree of conformance to specifications and standards3.

The other options are not as relevant for S&OP in an MTS environment as inventory. Item forecasts are estimates of future demand for specific products or services based on historical data, market trends, or customer inputs4. Item forecasts are an input to S&OP, not an output. S&OP uses item forecasts to generate aggregate demand plans for product families or categories, which are then matched with aggregate supply plans for production capacity or resources1. Backlog is the quantity of customer orders that have been received but not yet fulfilled3. Backlog is not applicable for S&OP in an MTS environment, because MTS products are produced before customer orders are received. MTS products are delivered from stock, not from backlog. Bookings are the quantity of customer orders that have been received and confirmed3. Bookings are also not applicable for S&OP in an MTS environment, because MTS products are not dependent on customer orders. MTS products are based on forecasted demand, not actual demand.

References: Make To Stock (MTS): Definition, Example, and How It Works - Investopedia; Forecasting - Definition & Examples - ASQ; What is Sales and Operations Planning (S&OP) | Oracle; Inventor y Management - Definition, Types, Objectives and Examples.

NO.8 The capacity requirements plan is used primarily to:

A. balance capacity and load at work centers.

B. calculate the level of available capacity.

C. determine the overall product load profile.

D. determine the priority of orders.

Answer: A

Explanation

The capacity requirements plan is used primarily to balance capacity and load at work centers. A work center is a location where one or more resources perform a specific operation or a group of operations. Capacity is the amount of time or output that a work center can offer for production activities. Load is the amount of time or output that a work center is required to produce based on the planned production schedule. Balancing capacity and load means matching the available capacity with the required load, so that there is no excess or shortage of capacity at any work center.
The capacity requirements plan is a report that shows the projected load and capacity of each work center over a planning horizon. It is derived from the master production schedule (MPS), which specifies the quantity and timing of finished goods to be produced, and the bill of materials (BOM), which specifies the components and materials needed for each finished good. The capacity requirements plan also uses the routing file, which specifies the sequence of operations and work centers required for each finished good, and the work center file, which specifies the capacity and availability of each work center. The capacity requirements plan can help to identify any gaps or surpluses in capacity at each work center and to take corrective actions, such as revising the MPS, rescheduling operations, adding or reducing resources, or outsourcing production.
The other options are not the primary uses of the capacity requirements plan. Calculating the level of available capacity is an input to the capacity requirements plan, not an output. The level of available capacity is determined by the work center file, which contains information such as shifts, hours, efficiency, utilization, and maintenance of each work center. Determining the overall product load profile is not a use of the capacity requirements plan, as it does not consider the product mix or demand variability. The overall product load profile is a general estimate of the total production volume or demand over a period of time. Determining the priority of orders is not a use of thecapacity requirements plan, as it does not consider the due dates or urgency of orders. The priority of orders is determined by using priority rules or dispatching methods, such as first-come-first-served (FCFS), shortest processing time (SPT), earliest due date (EDD), or critical ratio (CR).
References := Capacity Requirements Planning (CRP): Definition and Procedures, Capacity Requirements Planning (CRP Plan and Strategies) - ERP Information, Definition of Capacity Requirements Planning (CRP) - Gartner ...

NO.9 In the sales and operations planning (S&0P) process in a repetitive manufacturing environment, the resulting operationsplan for a product family could be stated in terms of which of the following outputs?

A. A Projected labor hours

B. Metric tons to be produced

C. Value of products to be produced

D. Number of products planned for shipment

Answer: D

Explanation

The sales and operations planning (S&OP) process is a cross-functional process that aligns the demand and supply plans of an organization. The S&OP process consists of several steps, such as data gathering, demand planning, supply planning, pre-S&OP meeting, executive S&OP meeting, and S&OP implementation. The output of the S&OP process is the production plan, which is a statement of the resources needed to meet the aggregate demand plan over a medium-term horizon. The production plan can be stated in different units of measure depending on the type of manufacturing environment. In a repetitive manufacturing environment, where the same or similar products are produced continuously or at regular intervals, the production plan can be stated in terms of the

number of products planned for shipment. This unit of measure reflects the volume and mix of products that are expected to be sold and delivered to the customers. The number of products planned for shipment can also be used to calculate the capacity requirements, material requirements, and inventory levels for each product family.
References: CPIM Exam Content Manual Version 7.0, Domain 4: Plan and Manage Supply, Section 4.1 :
Develop Supply Plans, Subsection 4.1.2: Describe how to develop a production plan (page 36).

NO.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 mostappropriately address correctingthe problem?

A. Business planning

B. Sales and operations planning (S&OP)

C. Detailed material planning

D. Master scheduling

Answer: B

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 quantityand 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.
References:
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

NO.11 An increase in the scrap allowance in an assembled item will result in which of the following consequences?

A. An increase in the component items' cost

B. A change in the bill ofmaterials'(BOM) quantity per assembled item

C. Replanning of the component items in material requirements planning (MRP)

D. An increase in the assembled item's planned lead time

Answer: C

Explanation

Scrap allowance is a percentage or quantity of material that is expected to be lost or wasted during the production process. Scrap allowance is usually applied to the component items in a bill of materials (BOM), which is a document that lists the materials, quantities, and relationships required to produce an end item. An increase in the scrap allowance in an assembled item will result in replanning of the component items in material requirements planning (MRP), which is a system that calculates the timing and quantity of materials and resources needed to meet the production plan. Replanning of the component items in MRP means that the system will adjust the planned order releases, order quantities, and due dates of the component items to account for the increased scrap allowance. Replanning of the component items in MRP will ensure that enough material is available to meet the demand for the assembled item, and to avoid shortages or excess inventory.

References: CPIM Exam Content Manual Version 7.0, Domain 4: Plan and Manage Supply, Section 4.2 :

Implement Supply Plans, Subsection 4.2.1: Describe how to implement material requirements planning (MRP) (page 38).

NO.12 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.

Answer: D

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. Lululemonalso fosters a strong brand identity and community among its customers by providing yoga classes, fitness events, online platforms, and social media engagement4.

References:

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

NO.13 Reducing distribution network inventory days of supply will have which of the following impacts?

A. Increase turnovers and increase cash-to-cash cycle time.

B. Increase turnovers and reduce cash-to-cash cycle time.

C. Decrease turnovers and reduce cash-to-cash cycle time.

D. Decrease turnovers and increase cash-to-cash cycle time.

Answer: B

Explanation

Reducing distribution network inventory days of supply will have the impact of increasing turnovers and reducing cash-to-cash cycle time. Distribution network inventory days of supply is a measure of how long it takes for a company to sell its entire inventory in its distribution network, which includes the warehouses and transportation systems that deliver the products to the customers1. It is calculated by dividing the average inventory by the cost of sales per day1. A lower distribution network inventory days of supply indicates that the company is selling its inventory faster and more efficiently, while a higher distribution network inventory days of supply indicates that the company is holding too much inventory or having difficulty selling its products.

Turnovers, also known as inventory turnover or stock turnover, is a measure of how many times a company sells and replaces its inventory in a given period. It is calculated by dividing the cost of goods sold by the average inventory2. A higher turnover indicates that the company is selling its inventory quickly and efficiently, while a lower turnover indicates that the company is holding too much inventory or having difficulty selling its products.

Cash-to-cash cycle time, also known as cash conversion cycle or net operating cycle, is a measure of how long it takes for a company to convert its cash outflows into cash inflows. It is calculated by adding the days sales outstanding (DSO), which is the average time it takes for customers to pay for their purchases, and the distribution network inventory days of supply, and subtracting the days payable outstanding (DPO), which is the average time it takes for the company to pay its suppliers3. A shorter cash-to-cash cycle time indicates that the company is managing its cash flow more effectively, while a longer cash-to-cash cycle time indicates that the company is tying up more cash in its operations.

Therefore, reducing distribution network inventory days of supply will have the impact of increasing turnovers and reducing cash-to-cash cycle time, as it will decrease the average inventory level, increase the cost of sales per day, and decrease the distribution network inventory days of supply component in the cash-to-cash cycle time formula. This will improve the efficiency and profitability of the company's operations and reduce its working capital needs.

References : Inventory Days Of Supply | Supply Chain KPI Library | Profit.co; Inventory Turnover Ratio | Formula | Calculator (Updated 2021); Cash Conversion Cycle - CCC.

NO.14 A supplier making a part with a specified dimension of 50 mm + 0.3 mm changes the tolerance range to + 0.5 mm. Which ofthe 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.
Answer: D
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.
References:
Understanding Process Capability Index (Cpk) [With Calculator]
[Process Capability Index - an overview | ScienceDirect Topics]
Converting A Capability Index to PPM Defective - Accendo Reliability

NO.15 Marketing has requested a significant change in the mix for a product family. The requested change falls between thedemand and the planning time fences. The most appropriate action by the master scheduler is to:
A. reject the request
B. accept the request.
C. forward the request to senior management.
D. check the availability of required material.
Answer: C
Explanation
The most appropriate action by the master scheduler is to forward the request to senior management.
According to the Time Fence Control (MRP and Supply Chain Planning Help) - Oracle, the demand time fence is a period within which the planning process does not consider forecast demand when calculating actual demand, and the planning time fence is a period within which the planning process does not alter the current material plan or master schedule. The master scheduler can make changes to the master schedule within the planning time fence, but only with approval from senior management. The request from marketing falls between the demand and the planning time fences, which means that it may affect the current material plan or master schedule, as well as the capacity and resource requirements of the production system. Therefore, the master scheduler should forward the request to senior management, who can evaluate the impact and feasibility of the request, and decide whether to approve or reject it.