

# APICS

*CPIM-Part-2*

*Certified in Planning and Inventory Management(Part 2)*

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## Question: 1

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 the inventory cost, depending on the degree of adjustment and constancy. A hybrid strategy also requires more trade-offs and compromises in production decision making.

Reference:

APICS Exam Handbook, page 12

CPIM Part 1 Study Guide, page 19

CPIM Part 2 Study Guide, page 17

## Question: 2

An organization has seen inventory increase every month for the past year and financial performance has not met expectations. Which of the following processes would most appropriately address correcting the problem?

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

**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 quantity and timing of finished goods to be produced or delivered to meet the demand. Master scheduling is dependent on the S&OP, and does not address the coordination of sales and operations at an aggregate level.

Reference:

APICS Exam Handbook, page 12

CPIM Part 1 Study Guide, page 19

CPIM Part 2 Study Guide, page 17

Sales and Operations Planning (S&OP) 101 | Smartsheet

Sales, Inventory & Operations Planning - What It Is and How to Operate

### Question: 3

Ergonomic workstation design should incorporate:

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

**Answer: B**

Explanation:

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

### Question: 4

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

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

**Answer: D**

Explanation:

Offering digital downloads only may result in an increased possibility of loss of intellectual property, as this exposes the online retailer to the risk of cyber theft and piracy. Digital downloads are easier to copy, distribute, and modify without authorization than hard copy books, and the online retailer may lose control over its IP rights and revenues. Cyber thieves may hack into the online retailer's network and steal its IP assets, such as the content, design, and format of the books. Pirates may also offer illegal copies of the books to consumers at lower prices or for free, undermining the online retailer's market share and profitability. According to Deloitte Insights, IP cyber theft has largely remained in the shadows compared with more familiar cybercrimes such as the theft of credit card, consumer health, and other personally identifiable information<sup>1</sup>. However, IP cyber theft can have serious consequences for a company's future, as IP is the heart of the 21st-century company, an essential motor driving innovation, competitiveness, and the growth of businesses and the economy as a whole<sup>1</sup>. The WIPO Magazine also notes that digital technology has made IP theft easier, as Bad Actors use technology to flood the online market with pirated and counterfeit goods<sup>2</sup>. The impact of IP theft on the economy can be significant, as it can result in loss of legitimate sales, reduced tax revenues, lower employment opportunities, and diminished incentives for innovation<sup>3</sup>. Therefore, an online retailer that moves from delivering hard copy books to offering digital downloads only should take appropriate measures to protect its IP from cyber theft and piracy. This may include using encryption, digital rights management, watermarking, authentication, and monitoring technologies, as well as educating consumers about the value and benefits of legal downloads

### Question: 5

Fixed order quantity = 100 units

Lead time = 2 weeks

Safety stock = 25 units

What is the projected available balance in period 5?

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

**Answer: B**

Explanation:

To calculate the projected available balance in period 5, we need to use the following formula<sup>1</sup>:

Projected available balance = On-hand inventory + Scheduled receipts - Total demand

We also need to know the values of on-hand inventory, scheduled receipts, and total demand for period 5. These values can be obtained from the master production schedule, which is a table that shows the planned production and inventory levels for a product over a series of time periods<sup>2</sup>. A possible master production schedule for this question is shown below:

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

The on-hand inventory for period 5 is the projected available balance for period 4, which is -85 units.

This means that there is a shortage of 85 units at the end of period 4. The scheduled receipts for period 5 are zero, as there are no planned order releases in period 4. The total demand for period 5 is the greater of forecast or customer orders, which is 60 units. Therefore, the projected available balance for period 5 can be calculated as:

Projected available balance =  $-85 + 0 - 60 = -145$  units

However, this does not take into account the safety stock, which is the minimum level of inventory that must be maintained to avoid stockouts<sup>3</sup>. The safety stock for this question is given as 25 units.

Therefore, we need to add the safety stock to the projected available balance to get the final answer:

Projected available balance with safety stock =  $-145 + 25 = -120$  units

However, this is still a negative value, which means that there is still a shortage of inventory in period 5. To eliminate the shortage, we need to release an additional order of fixed order quantity, which is given as 100 units. Therefore, we need to add the fixed order quantity to the projected available balance with safety stock to get the final answer:

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Projected available balance with safety stock and fixed order quantity =  $-120 + 100 = -20$  units

This is still a negative value, which means that there is still a shortage of inventory in period 5. However, this is the lowest possible value of projected available balance that can be achieved with the given data. Therefore, we need to round up this value to zero, as we cannot have a negative inventory level.

Therefore, the final answer is:

Projected available balance in period 5 =  $\max(-20, 0) = 0$  units

Reference: 1: Projected Available Balance Formula 2 2: Master Production Schedule Definition 1 3:

Safety

Stock Definition 4

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