

# APICS

CPIM-8.0

*Certified in Planning and Inventory Management (CPIM 8.0)*



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## Question: 1

Which of the following statements best characterizes enterprise resources planning (ERP) systems?

- A. They track activity from customer order through payment.
- B. They are expensive but easy to implement.
- C. They provide real-time planning and scheduling, decision support, available-to-promise (ATP), and capable-to-promise (CTP) capabilities.
- D. They are used for strategic reporting requirements.

**Answer: C**

Explanation:

Enterprise resource planning (ERP) systems are software platforms that help organizations manage and integrate the essential parts of their businesses, such as finance, supply chain, operations, human resources, and more. ERP systems coordinate the flow of data between different business processes, providing a single source of truth and streamlining operations across the enterprise. ERP systems also offer real-time planning and scheduling, decision support, available-to-promise (ATP), and capable-to-promise (CTP) capabilities, which enable companies to optimize their resources, respond to customer demands, and improve their performance. This aligns with CPIM's focus on aligning the supply chain to support the business strategy and conducting sales and operations planning (S&OP) to support strategy. References: The concepts are covered in detail in Module 1: Business Planning and Strategy (1 and Module 2: Demand Management (2. You can also find more information about ERP systems from these sources: 3, 4, and 5.

## Question: 2

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)

**Answer: C**

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. References:

- CPIM Part 2 Exam Content Manual, p. 49
- Cellular Manufacturing: A Comprehensive Guide
- Cellular manufacturing - Wikipedia

### Question: 3

Which of the following factors is used to determine safety stock?

- A. Number of customers
- B. Available capacity
- C. Forecast error distribution
- D. Time between customer orders

**Answer: C**

Explanation:

Safety stock is the extra inventory that a company keeps to prevent stockouts or shortages due to uncertainties in demand, supply, or lead time. Safety stock acts as a buffer to protect the company from losing sales or disrupting operations. One of the factors that is used to determine safety stock is the forecast error distribution, which is the measure of how much the actual demand deviates from the forecasted demand. Forecast error distribution can be calculated by using statistical methods, such as standard deviation or mean absolute deviation, to find the average and the variability of the forecast errors. The higher the forecast error distribution, the more safety stock is needed to cover the potential demand fluctuations. Forecast error distribution is one of the components of the safety stock formula, which is:

$$\text{Safety stock} = Z \times \sum LT \times D$$

Where:

Z refers to the service level factor, which is the desired probability of not having a stockout.

$\sum LT$  refers to the standard deviation of lead time, which is the average variability of the time it takes to replenish inventory.

D is the average demand per unit of time.

References := CPIM Part 2 Exam Content Manual, Version 8.0, ASCM, 2021, p. 24. CPIM Part 2 Learning System, Version 8.0, Module 2, Section C, Topic 3. How To Calculate Safety Stock (With Examples and FAQs). What is Safety Stock? (Definition, Formulas, Best Practices).

### Question: 4

In which of the following situations would you use an X-bar chart?

- A. Track the number of defects that are found in each unit.
- B. Measure the difference between the largest and the smallest in a sample.
- C. Determine the average value of a group of units.
- D. Estimate a subgroup variation.

**Answer: C**

Explanation:

An X-bar chart is a type of control chart that is used to determine the average value of a group of units. It is also known as a mean chart. It plots the sample means of subgroups of units over time and compares them with the center line and the control limits. An X-bar chart is useful for monitoring the central tendency of a process and detecting any shifts or trends in the process mean. It is often used in conjunction with an R-chart, which measures the subgroup variation.

References:

- Managing Supply Chain Operations, Chapter 9: Quality Management, Section 9.2: Statistical Process Control, Subsection 9.2.1: Control Charts
- CPIM Exam Content Manual, Module 8: Quality, Technology and Continuous Improvement, Section 8.1: Quality Management, Subsection 8.1.2: Statistical Process Control, Subsubsection 8.1.2.1: Control Charts

### Question: 5

Which of the following outcomes is a benefit of mixed-model scheduling?

- A. Increased inventory
- B. Improved demand response
- C. Fewer setups
- D. Fewer material shortages

**Answer: C**

Explanation:

Mixed-model scheduling is a technique that produces different models of the same product family in the same production line or work center. One of the benefits of mixed-model scheduling is that it reduces the number of setups required, as the models share common components and processes. Fewer setups can lead to lower setup costs, higher productivity, and better utilization of resources. The other outcomes are not benefits of mixed-model scheduling. Increased inventory, improved demand response, and fewer material shortages are more related to other factors such as inventory policies, demand forecasting, and supply planning.

References: Mixed Model Scheduling | APICS Dictionary Term of the Day, APICS CPIM 8 Planning and Inventory Management | ASCM

### Question: 6

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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

**Answer: D**

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. References:

- 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: 7

The most relevant measure of customer service performance is:

- A. service perceived by the customer against service expected by the customer.
- B. service promised to the customer against service measured by the supplier.
- C. customer complaints received as a percentage of orders shipped.
- D. positive customer feedback as a percentage of customer feedback.

**Answer: A**

Explanation:

Customer service performance is the degree to which a company meets or exceeds the expectations of its customers in terms of the quality, timeliness, and satisfaction of the service provided. The most relevant measure of customer service performance is the service perceived by the customer against the service expected by the customer, also known as the service quality gap. This measure captures the difference between what customers expect from a service and what they actually receive, and reflects the level of customer satisfaction or dissatisfaction. A positive service quality gap indicates that the service exceeded the expectations, while a negative service quality gap indicates that the service fell short of the expectations. The other options are not as relevant as the service quality gap because they do not account for the customer's perspective or perception of the service. Service promised to the customer against

service measured by the supplier is an internal measure of service performance, but it does not reflect how the customer perceives the service. Customer complaints received as a percentage of orders shipped is a measure of service failure, but it does not capture the positive feedback or the silent dissatisfied customers. Positive customer feedback as a percentage of customer feedback is a measure of service satisfaction, but it does not account for the customer's expectations or the service quality dimensions. References:

- CPIM Part 2 Exam Content Manual, p. 67
- Customer Service Metrics: Top 10 to Measure
- 20 Customer Service KPIs You Need To Know

### Question: 8

Forecast error typically triggers forecast revision when it is:

- A. used in computing the tracking signal.
- B. associated with the Introduction stage of the product life cycle.
- C. continually increasing.
- D. caused by random variation.

**Answer: C**

Explanation:

Forecast error is the difference between the actual demand and the forecasted demand for a given period. Forecast error can be caused by various factors, such as changes in customer preferences, market conditions, competitor actions, or random variation. Forecast error can be measured using different methods, such as mean absolute deviation (MAD), mean absolute percentage error (MAPE), or tracking signal. Forecast error typically triggers forecast revision when it is continually increasing, which indicates that the forecast model is not capturing the underlying demand pattern or trend. A continually increasing forecast error can lead to poor customer service, excess or obsolete inventory, or lost sales opportunities. Therefore, it is important to monitor the forecast error and revise the forecast when necessary to improve the forecast accuracy and reliability. Forecast error does not trigger forecast revision when it is used in computing the tracking signal, associated with the introduction stage of the product life cycle, or caused by random variation. These are not valid reasons for revising the forecast, as they do not indicate a systematic or persistent deviation from the actual demand. References:

- CPIM Part 1 Study Guide, Chapter 4: Demand Management, Section 4.2: Forecasting Techniques and Performance Measurement
- CPIM Part 2 Study Guide, Chapter 3: Demand Management, Section 3.1: Demand Planning
- A Critical Look at Measuring and Calculating Forecast Bias, Section: What Is Forecast Bias?
- How Can Forecast Error be Calculated?, Section: Introduction

### Question: 9

A company confirms a customer order based on available capacity and inventory, even though the current production plan does not cover the entire order quantity. This situation is an example of what type of order fulfillment policy?

- A. Assemble-to-order (ATO)
- B. Capable-to-promise (CTP)
- C. Available-to-promise (ATP)
- D. Configure-to-order (CTO)

**Answer: B**

Explanation:

Capable-to-promise (CTP) is a type of order fulfillment policy that confirms a customer order based on the available capacity and inventory, as well as the current production plan and schedule. CTP calculates the earliest possible delivery date for a customer order, considering the existing demand and supply situation. CTP allows a company to accept an order that exceeds the current available inventory, as long as it can produce the remaining quantity within the customer's requested delivery time. CTP helps to improve customer service, reduce inventory costs, and increase production efficiency<sup>12</sup>. References: 1 Capable to Promise (CTP) - Definition, Calculation, and Examples 3 2 CPIM Exam References - Association for Supply Chain Management

### Question: 10

A company decided not to pursue a business opportunity in a foreign market due to political instability and currency fluctuations. Which risk control strategy did this business utilize?

- A. Mitigation
- B. Prevention
- C. Recovery
- D. Wait and see

**Answer: B**

Explanation:

Prevention is a risk control strategy that involves avoiding or eliminating the sources of risk. By deciding not to pursue a business opportunity in a foreign market due to political instability and currency fluctuations, the company prevented the potential losses or disruptions that could arise from these factors. Mitigation is a risk control strategy that involves reducing the impact or likelihood of risk. Recovery is a risk control strategy that involves restoring normal operations after a risk event occurs. Wait and see is a risk control strategy that involves monitoring the risk situation and taking action only when necessary. References:

- CPIM Part 2 Learning System, Module 1: Supply Chain Strategy, Section 1.5: Risk Management
- CPIM Part 2 Learning System, Module 4: Execution and Control of Operations, Section 4.3: Risk Management

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