Fundamental IT Engineer Examination
(Mgt & Strategy Morning)
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Question Nos.51-80

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Q51. A project consisting of several activities has a single critical path. Which of the following is an appropriate description of critical path activities for the project?

a) Critical path activities can be performed in parallel.

b) Critical path activities have a non-zero total float time.

c) For each critical path activity, the early start date equals the late start date.

d) The activity with the longest duration in the project is one of the critical path activities.

Answer: c

Q52. Which of the following is an appropriate description of the Responsibility Assignment Matrix that is used for project human resource management?

a) Allocating work packages to those who are responsible for project work

b) Defining the limits of the project sponsor's responsibilities

c) Defining the terms of reference of the project

d) Monitoring the current engagement level of stakeholders

Answer: a

- A responsibility assignment matrix (RAM) in project management, also known as a [RACI chart](#) or RACI matrix, details all the necessary stakeholders and clarifies responsibilities amongst cross-functional teams and their involvement level in a project. RACI stands for Responsible, Accountable, Consulted, and Informed and each letter corresponds to a team member.

- A RAM in project management should be referred to by all parties throughout a project because it helps plan an individual's roles and responsibilities before work begins. A RACI matrix ensures all stakeholders know who is responsible for completing a task or getting feedback on deliverables.

| Step	Project Initiation	Project Executive	Project Manager	Business Analyst	Technical Architect	Application Developers
1	Task 1	C	A/R	C	I	I
2	Task 2	A	I	R	C	I
3	Task 3	A	I	R	C	I
4	Task 4	C	A	I	R	I

Q53. Which of the following is an appropriate purpose for using a WBS (work breakdown structure) in a software development project?

a) To clarify the time sequence of activities and understand the critical path that should be intensively managed

b) To decompose a development task into smaller sub-tasks with a manageable size and organize them into a hierarchical structure

c) To optimize the total cost when there is a trade-off relationship between the number of days and the costs required for development

d) To show the schedule of activities by using bars and clarify the start dates and end dates of the activities as well as the progress at the current point

Answer: b

WBS (Work Breakdown Structure) is a hierarchical structure diagram in which the activities necessary for achieving the purpose of the project are divided in a stepwise fashion with the deliverables as the main constituent.

On the basis of the project scope statement, the project deliverables are subdivided (or decomposed) into the work package, which is the lowest component. The work package is divided into more detailed activities and used when the cost and schedule are estimated.
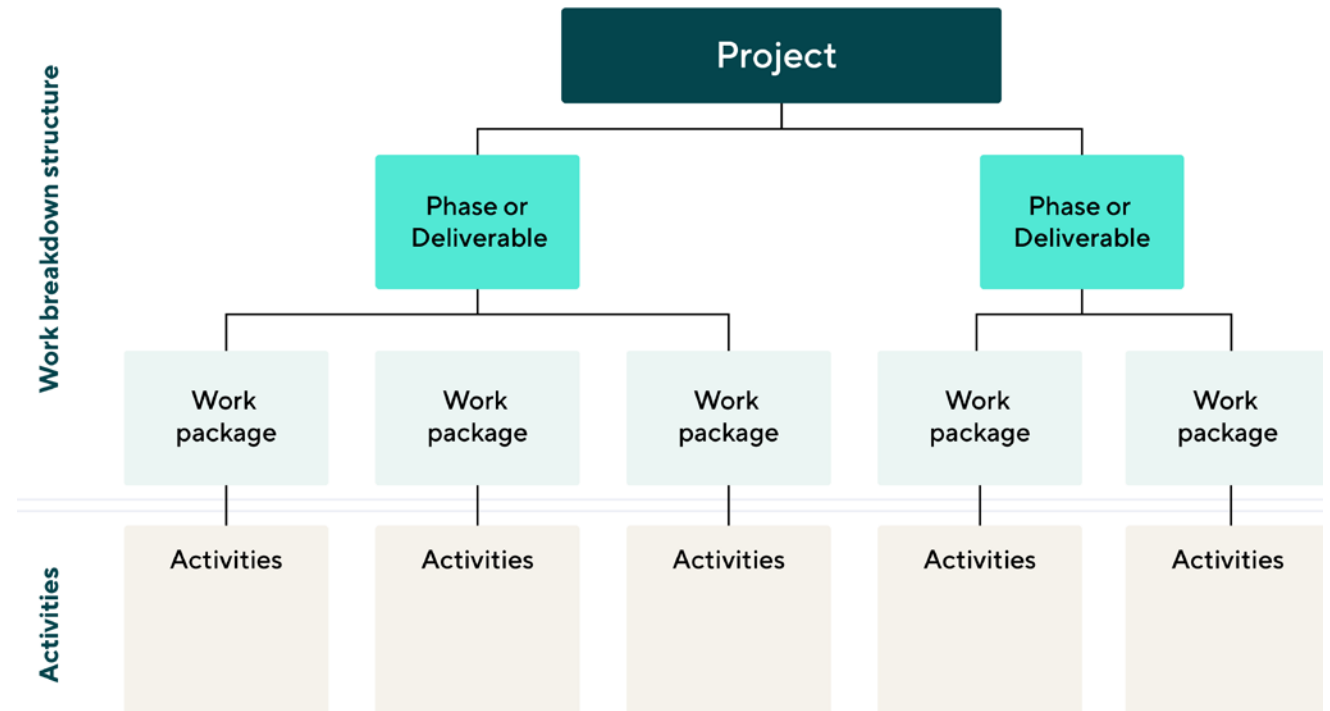
Q54. Which of the following is an appropriate description for group decision-making techniques used in the estimation process of an activity duration?

a) The estimates created using these techniques may include contingency reserves, sometimes referred to as time reserves or buffers, in the project schedule to account for schedule uncertainty.

b) These are team-based approaches, such as brainstorming, the Delphi, or nominal group techniques, which are useful for engaged team members to improve their estimation accuracy and commit to the estimates.

c) These techniques use statistical relationships between historical data and project parameters to calculate an estimate for project cost, budget, or duration.

d) Using these techniques, a group of experts, guided by historical information, can provide duration estimate information or recommended maximum activity durations from prior similar projects.

Answer: b

- Group decision-making techniques are strategies for structuring group members' interactions to enhance the quality of a collective decision. It is a set of rules or procedures that specify the process members should follow when contributing to a decision pertaining to their group.
- An effective group decision is characterized by a full use of members' resources, an efficient use of time, and a high-quality outcome

Four of the most commonly cited group decision-making techniques are

1. **brainstorming,**

2. **the nominal group technique,**

3. **the Delphi technique, and**

4. **the stepladder technique**.

These techniques vary in the manner in which they structure group problem solving.

Q55. Which of the following is an appropriate meaning of a mission-critical system?

a) As with an operating system, it is an indispensable system necessary for operating a business system.

b) It is a system that has a significant impact on corporate activities and society when a failure occurs.

c) It is a system that is first installed on a trial basis, and if successful, a full-scale installation is implemented.

d) It is a system where the operating performance is close to the limit.

Answer: b

- A mission critical system is a system that is essential to the survival of a business or organization. When a mission critical system fails or is interrupted, business operations are significantly impacted.

- Examples of mission critical systems are: an online banking system, railway/aircraft operating and control systems, electric power systems, and many other computer systems that will adversely affect business and society when they fail.

Q56. Which of the following is an appropriate description of the relationship between a record of an incident and a record of a problem in IT service management?

a) A cross-reference to the incident that triggered the record of the problem is included in the record of the problem.

b) If known errors have been identified at the time of ending the record of the problem, the record of the incident that triggered the record of the problem is deleted.

c) One (1) problem record is always associated with one (1) incident record.

d) Problems are classified and recorded by a different criterion from the classification of incidents.

Answer: a

Q57. A system is planned to be operational 22 hours per day. However, there are two (2) failures with downtimes of 0.5 hours and 1.5 hours in 100 days. Which of the following is the approximate MTBF of this system during the period in hours?

a) 0.00091   b) 1.0   c) 2.0   d) 1100

Answer: d

- MTBF means **Mean Time Between Failures**, and it is the average time elapsed between two failures in the same asset.

- Along with MTTR (Mean Time to Repair), it's one of the most important maintenance **KPIs to determine availability and reliability**. The higher the MTBF, the more reliable the asset.

MTBF calculation

MTBF = # of operational hours ÷ # of failures

$$MTBF = \frac{Total\ Working\ Time\ -\ Total\ Breakdown\ Time}{Number\ of\ Breakdowns}$$

Q58.　When a business continuity plan (BCP) is developed given the possibility of a system failure, which of the following is the item that is implemented as part of business impact analysis?

a) Collectively educating the concerned persons about the alternate procedures and recovery procedures during an information system failure

b) Determining the maximum allowable downtime for the information system

c) Executing a test to verify the effectiveness of BCP

d) Revising the contents of the BCP given changes in the internal and external environment of the information system

Answer: b

BCP (Business Continuity Plan)

- This refers broadly to the plan of action and policies that are designed to avoid in advance or quickly recover from any damages that may result in a risk of an interruption of vital business activities, such as a disaster or failure.

- BCP also includes business impact analysis, which determines policies, such as the maximum allowed amount of business stoppage time upon analysis of the losses and the effects of an interruption of business activities.
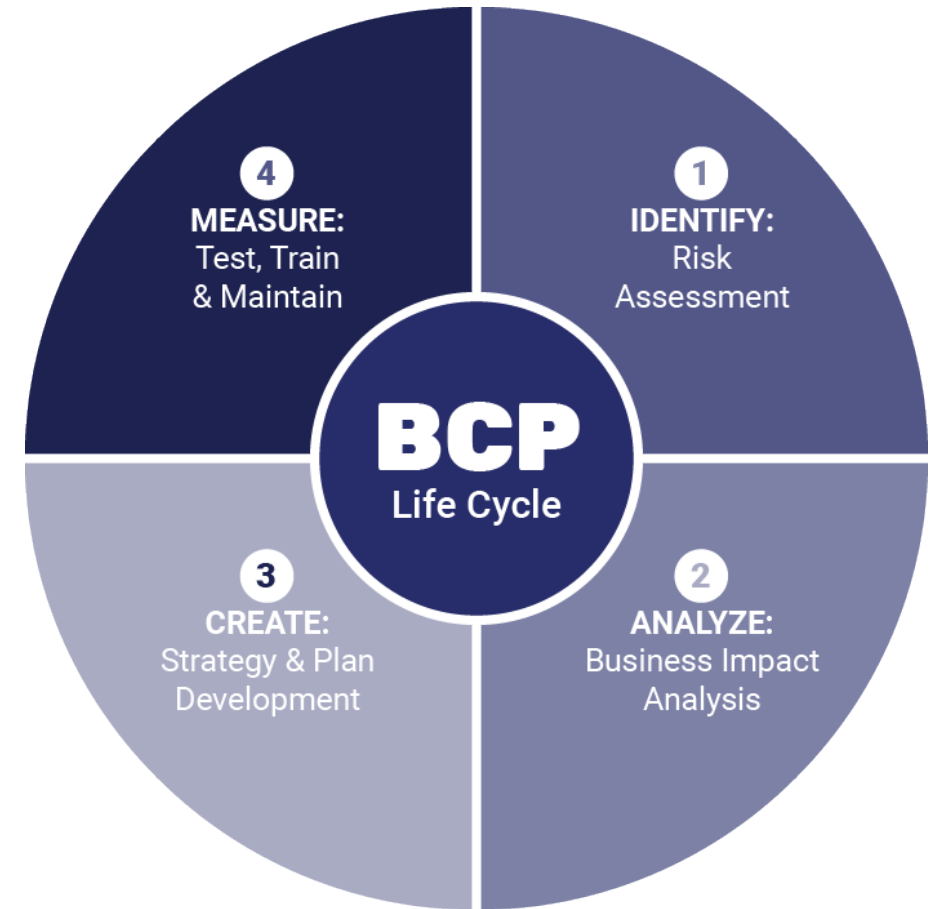
Q59. Which of the following is the most appropriate purpose for which a system auditor exchanges opinions with an audited department concerning the draft version of an audit report?

a) To confirm that there are no factual errors in the findings and recommendations to be described in the audit report

b) To issue the audit report to the audited department before the audit report is submitted to the person who is requesting the audit

c) To receive the approval of the responsible person of the audited department concerning the recommendations described in the audit report

d) To substitute with additional auditing activities concerning the part of the audit report for which evidence is insufficient by orally confirming with the audited department

Answer: a

Q60. Which of the following is the appropriate activity performed by a system auditor who audits access control?

a) Creating and storing the access control records for the software
b) Establishing an access control policy for the network
c) Implementing the access control procedures for hardware
d) Viewing the access control rules for data

Answer: d

Q61. Which of the following is a description of SOA?

a) It consists of four (4) main concepts; the business scheme, data scheme, application and processing scheme, and technical scheme, and it aims to optimize the business and the system.

b) It makes it easier to address a change in the business by constructing software from components called services.

c) It performs design at the component levels by using a combination of three (3) logical structures; a sequence, selection, and iteration.

d) It uses a data flow diagram and simultaneously creates a model regarding information and a model regarding functions.

Answer: b

SOA (Service Oriented Architecture) is a method in which the functions (i.e., software components) that are constructed and organized according to the service elements of a business process are made publicly available on a network and are linked together to construct an information system with superior expandability and adaptability. SOA is an "information system construction method" that constitutes information systems by combining software that has functions for a specific business process, and it can also be called a "business system construction method" that constitutes a business process by combining processing that is performed in the business process.

Service-oriented architecture (SOA) is a method of software development that uses software components called services to create business applications. Each service provides a business capability, and services can also communicate with each other across platforms and languages. Developers use SOA to reuse services in different systems or combine several independent services to perform complex tasks.

Q62. Which of the following is an appropriate description of BPR (Business Process Reengineering)?

a) BPR is a management practice used to provide the overall governance of an organization in a business process environment to improve agility and operational performance.

b) BPR is a management strategy used to automate key business processes that helps in saving time, promoting efficiency, and ultimately reducing costs to enhance the value of an organization.

c) BPR is a management system used in marketing and business to automate the sales activities, such as contact management, order taking and fulfillment, information sharing, inventory monitoring, and sales forecast analysis.

d) BPR is a management technique used to redesign and restructure value-creating processes in an organization to gain significant benefits in productivity, profitability, service, and quality through maximizing the potential of individuals and teams.

Answer: d

- BPR (Business Process Reengineering) or reengineering refers to performing a drastic review of the current business process, and reconstructing by improving the flow of business operations and the details of individual business operations.
- BPR also has the potential to lead to the discovery of new business models.

- However, as BPR is generally a one-time business process improvement, a reconstructed new business process may become obsolete because of changes in the external environment.
- Therefore, the approach of BPM (Business Process Management) in which management is performed by using the PDCA cycle (Plan→Do→Check→ Act) can be applied with the aim of continuous improvement in a business process.
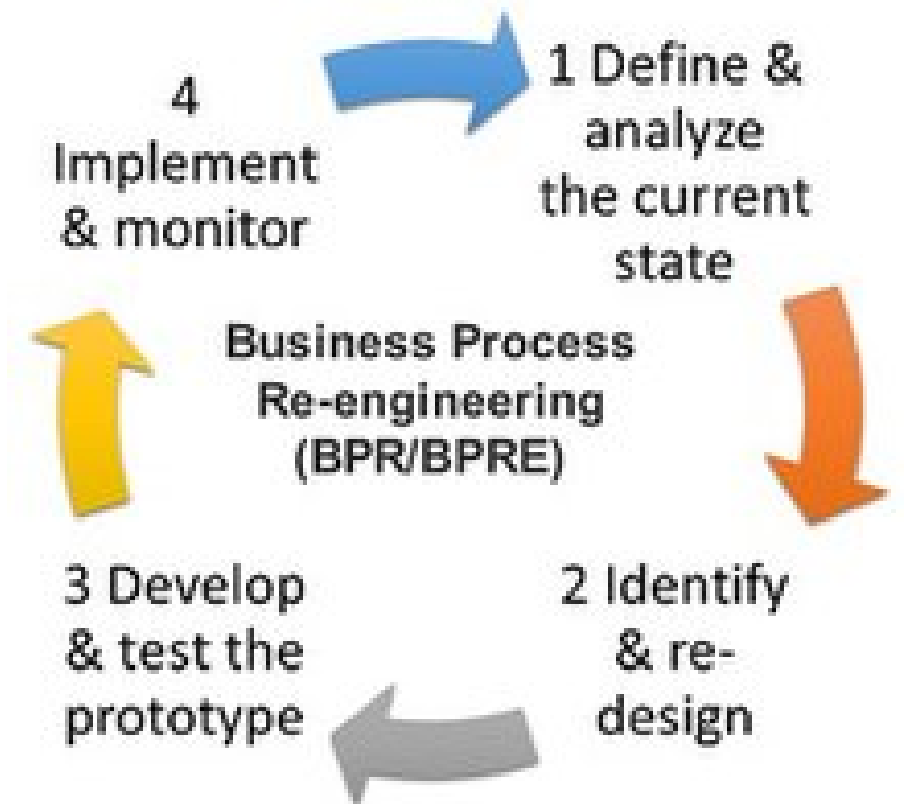
Q63. Which of the following is a usage scenario for the adoption of UML as a technique for visualizing business processes?
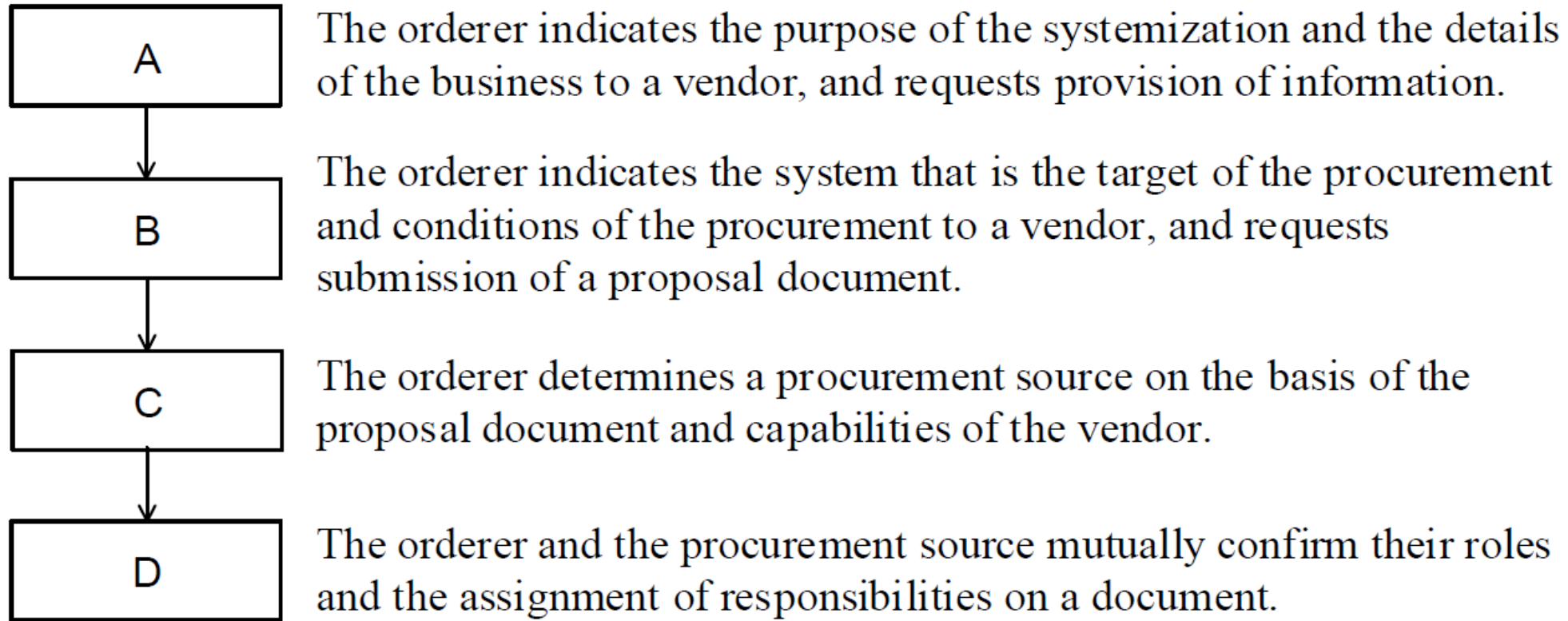
a) Diagrams are shown by using a data-oriented approach where objects are handled as entities, their attributes, and the relationships among the entities.

b) To represent processes by using data flows, sources and sinks of data, data stores, and data processes are connected with arrows that indicate data flow.

c) To represent processes from multiple viewpoints, some purpose-specific modeling methods are used, and each model is depicted by using standardized notation rules for object modeling.

d) To thoroughly represent the functions of a process, the events that occur in response to a single request are described by using the conditional branch format.

Q64. In computerization planning, which of the following is an activity that should be performed?

a) Clarifying what roles are assigned to the business and information-system departments when the organizational structure of system development is planned and clarifying the basis of cost calculation for the development, operation, and maintenance when considering the costs

b) Determining interfaces, such as screens or forms, based on the requirements definition document and describing them in the design document

c) Performing maintenance and management of the system so that it conforms to the business and environment and analyzing details and clarifying the potential impacts of modification requests

d) Performing system startup and shutdown, monitoring, and file maintenance in a planned manner and verifying that business is being carried out smoothly

Answer: a

Q65. When an information system is procured through the steps shown in the figure below, which of the following is a word or phrase that should be inserted in the blank B?

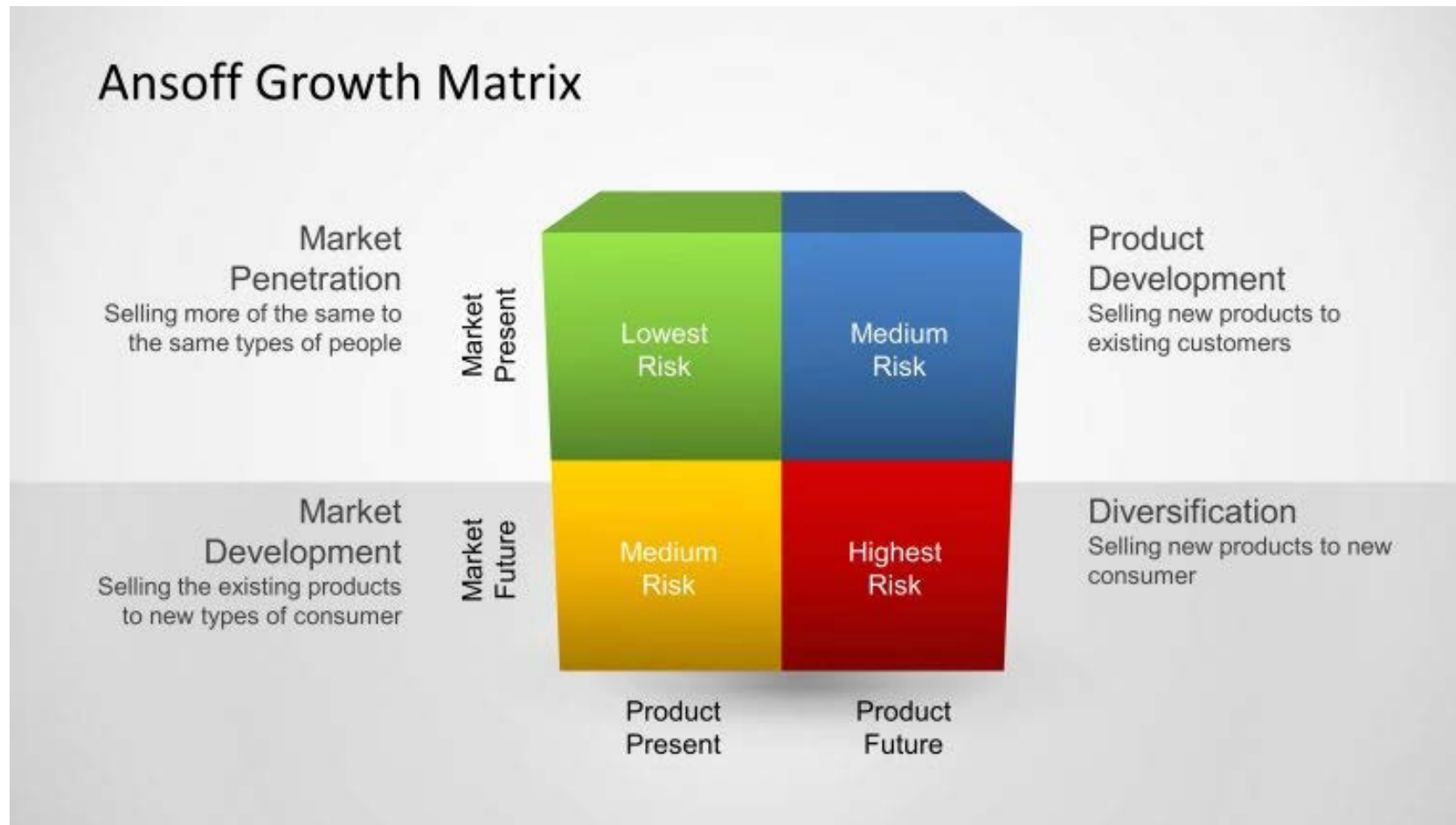|	
A	The orderer indicates the purpose of the systemization and the details of the business to a vendor, and requests provision of information.
B	The orderer indicates the system that is the target of the procurement and conditions of the procurement to a vendor, and requests submission of a proposal document.
C	The orderer determines a procurement source on the basis of the proposal document and capabilities of the vendor.
D	The orderer and the procurement source mutually confirm their roles and the assignment of responsibilities on a document.

a) Concluding a contract

b) RFI

c) RFP

d) Selecting a provider

A request for proposal (RFP) is a business document that announces a project, describes it, and solicits bids from qualified contractors to complete it. Most organizations prefer to launch their projects using RFPs, and many governments always use them.

Q66. In a growth matrix proposed by Ansoff, which of the following is a strategy for expanding a business with an existing product in an existing market?

a) Diversification

b) Market development

c) Market penetration

d) Product development

The **Product-Market Growth Matrix** or **Ansoff Matrix** is a strategic planning tool developed in 1957 by Igor Ansoff to help firms recognize if there was any advantage to entering a market.

Ansoff Growth Matrix

Market Penetration
Selling more of the same to the same types of people

Market Development
Selling the existing products to new types of consumer

Product Development
Selling new products to existing customers

Diversification
Selling new products to new consumer

	Product Present	Product Future
Market Present	Lowest Risk	Medium Risk
Market Future	Medium Risk	Highest Risk

Q67. PEST analysis is used to analyze the external environment in determining a business strategy. Which of the following is an appropriate set of external environmental factors that PEST analysis analyzes?

a) Politics, Economics, Society, Technology

b) Politics, Enterprises, Society, Time

c) Price, Economics, Satisfaction, Technology

d) Price, Enterprises, Safety, Time

- PEST Analysis is a simple and widely used tool that helps you to analyze the Political, Economic, Socio-Cultural, and Technological changes in your business environment.
- So you can gain a better understanding of the "big picture" forces of change that you're exposed to, and, from this, take advantage of the opportunities that they present.

PEST Analysis

Political
- Political stability
- Regulation and de-regulation
- Statutes, laws, codes of conduct
- Government funding, subsidies, support for specific industries
- Fiscal/ monetary policy
- Tax rates
- Trade agreements

Economic
- Economic trends
- Economic stability – inflation, wages growth, GDP, GNP
- Exchange rates
- Trade agreements
- Seasonality and economic cycles
- Consumer confidence
- Consumer purchasing power- discretionary incomes

Social
- Demographic changes – population growth, age distribution, population density, geographic distribution
- Consumer attitudes - tastes and preferences
- Social influencers- role models, opinion leaders
- Shopping habits –preferred channels, channel switching, online & offline shopping

Technological
- Innovation, breakthroughs or technological developments
- New product materials or ingredients, new packaging solutions
- Improved production processes or business models
- New ways of transacting business
- New machinery or software

Q68. In a process that aims to produce ideal technology, technology follows an evolutionary process that progresses from the introduction stage, growth stage, maturity stage, and decline stage. Then, it transitions to the next technological phase. Which of the following is used to represent this technological evolution process?

a) Bathtub curve

b) Demand curve

c) Learning curve

d) Technology S-curve

The technology S-curve displays the improvement of performance of a technology through the collective efforts of multiple actors (e.g., firms, individuals, institutes, universities, associations, etc.) over time within an industry or technological domain.
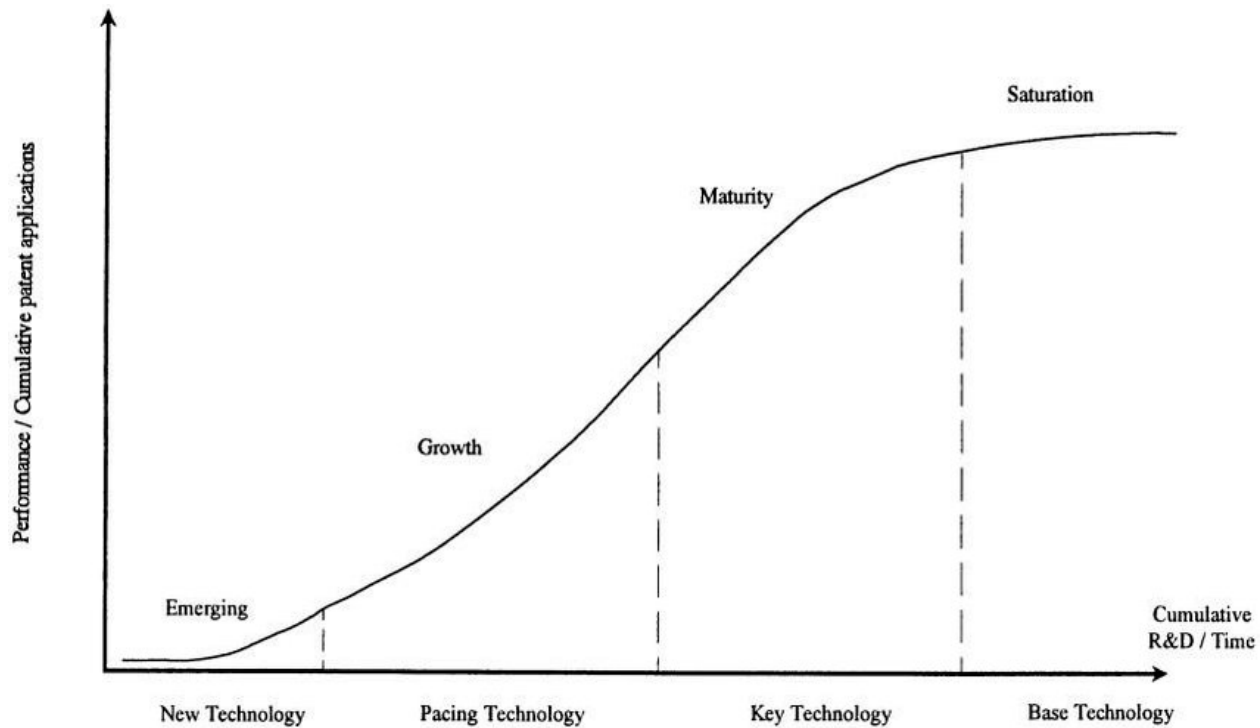
The bathtub curve is **a graphical representation of the expected failure rates of assets**. It is comprised of three parts: Infant mortality period – characterized by a high rate of failures in a short amount of time. Normal life period – the number of failures over time remains constant.
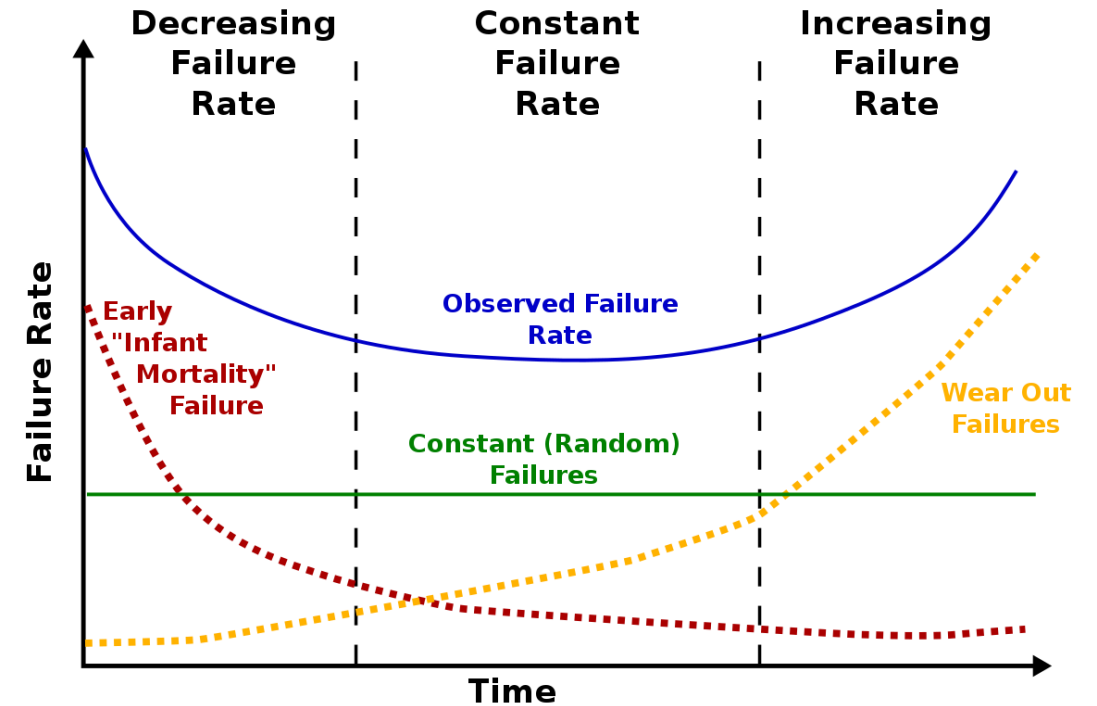
A learning curve is **a mathematical concept that graphically depicts how a process is improved over time due to learning and increased proficiency**. The learning curve theory is that tasks will require less time and resources the more they are performed because of proficiencies gained as the process is learned.
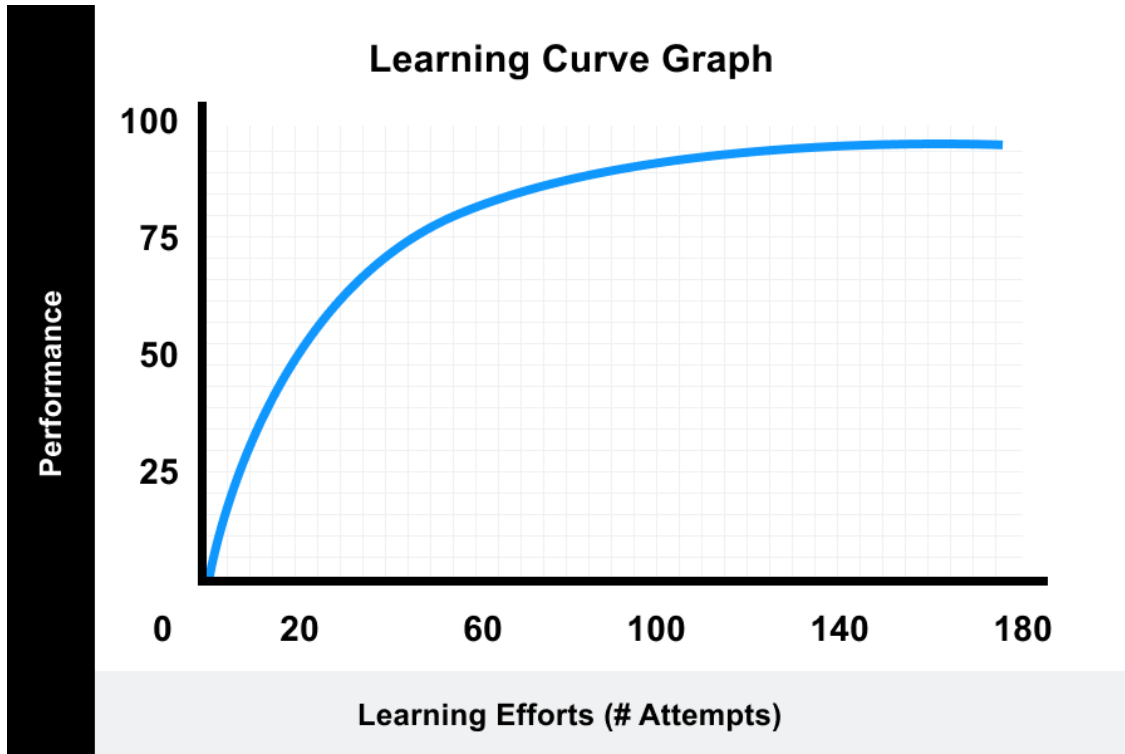
A demand curve **represents the relationship between the price of a good or service and the quantity demanded for a given period of time**. Typically, as the price rises, the demand falls; as a result, the curve slopes down from left to right.

Learning Curve Graph
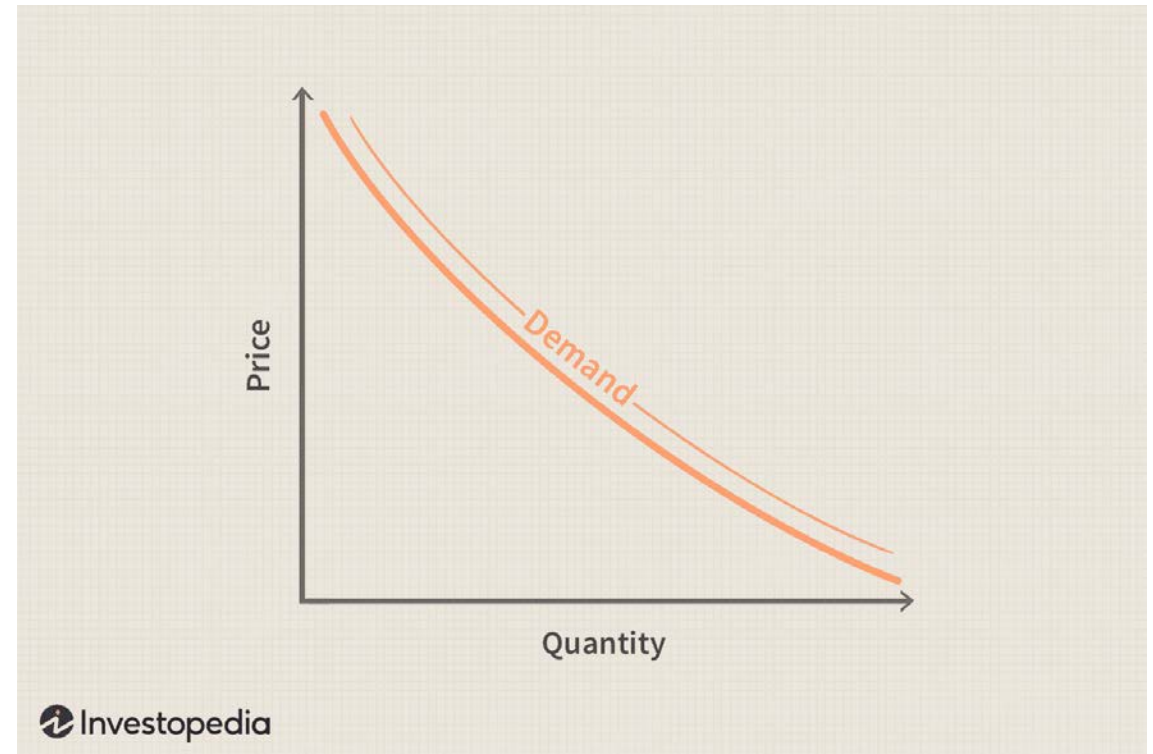
Q69. When trial production is performed for components to be loaded into electrical appliances, which of the following is the least expensive development method? Here, the construction time of each process is six (6) months for the creation process, three (3) months for the modification process, and two (2) months for the evaluation process. The cost per one (1) person-month is 6,000 dollars for the creation process and 10,000 dollars for each of the modification and evaluation processes. Costs other than the purchase cost, outsourcing cost, and person-month cost shall not be considered.

Answer: a

	Development method	Purchase cost (dollars)	Outsourcing cost (dollars)	Number of persons per month (persons)		
				Creation process	Modification process	Evaluation process
a)	Purchasing samples and modifying them in-house	200,000	0	0	4	1
b)	Outsourcing in batches	0	350,000	0	0	0
c)	Modifying in-house assets	0	0	0	10	3
d)	Creating new products in-house	0	0	10	0	2

a:200,000 + 4*3*10000 +1 *2*10000 = 340000

C: 10*3*10,000 + 3*2*10,000 = 360000

D: 10*6*6000 + 2*2*10000 = 400000

Q70. Which of the following is a characteristic of MRP?

a) The development, designing, and production preparation of a product are performed simultaneously in parallel.

b) The number of required components is calculated on the basis of the standard production plan of a product.

c) The production of a product is initiated after an order from a customer is received.

d) Work instructions and transport instructions are provided by using a worksheet.
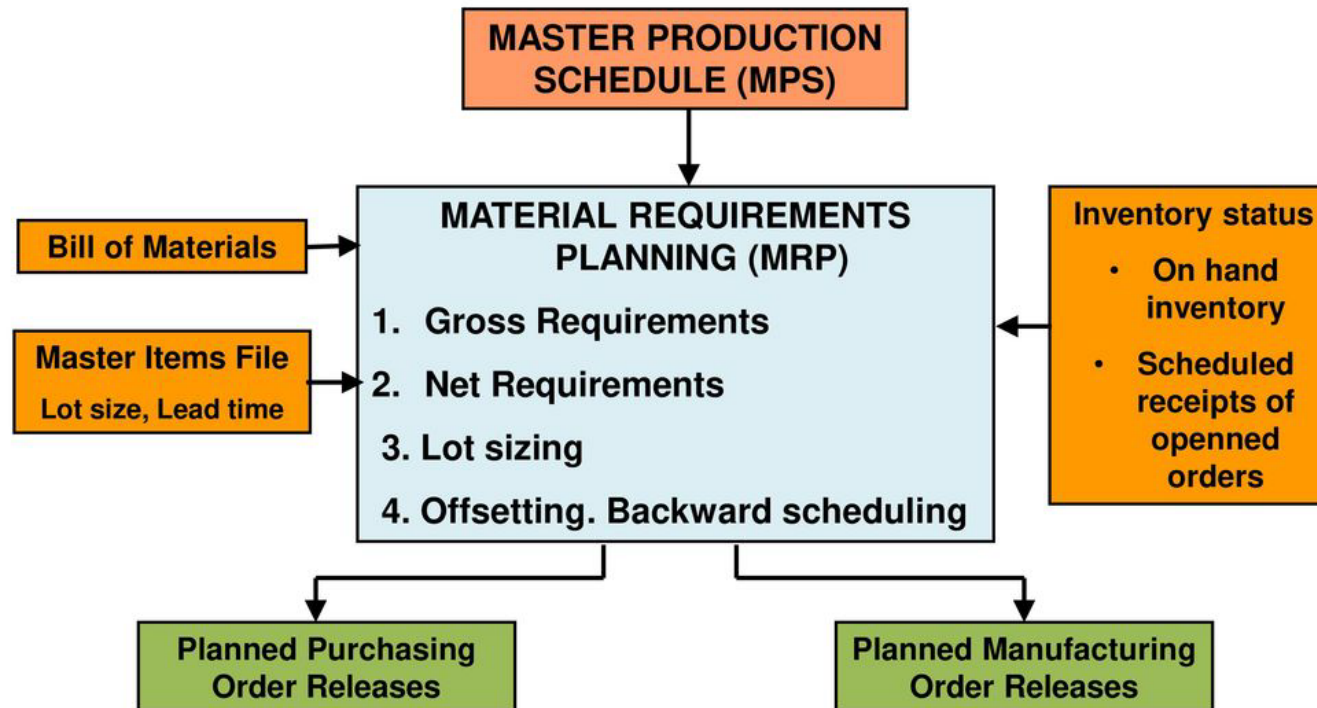
Material Requirements Planning (MRP)

[mə-ˈtir-ē-əl ri-ˈkwī(-ə)r-mənts ˈpla-niŋ]

An approach to inventory management in which a company uses computers to predict the timing and quantity of materials needed to complete a production process.

Investopedia

MRP (Material Requirements Planning)

- This is a system by which the flow of resources from the raw material necessary for production up to the finished product is planned and managed on the basis of the production plan.
- The net requirement of the necessary resources is determined on the basis of the bill of materials, and the procurement plan of resources is created.

Basic Structure of MRP system

MASTER PRODUCTION SCHEDULE (MPS)

Bill of Materials

Master Items File
Lot size, Lead time

MATERIAL REQUIREMENTS PLANNING (MRP)
1. Gross Requirements
2. Net Requirements
3. Lot sizing
4. Offsetting. Backward scheduling

Inventory status
- On hand inventory
- Scheduled receipts of openned orders

Planned Purchasing Order Releases

Planned Manufacturing Order Releases

Q71.   Which of the following is an explanation of the Kanban (just-in-time) system?

a) To improve work efficiency at each operation, parts and semi-finished products having unified specifications are procured.

b) To minimize intermediate stock, parts required for the production line are procured from the previous process on the basis of a production plan.

c) To procure parts efficiently, they are procured from affiliated companies.

d) To procure parts of higher quality, parts are procured via competitive bidding among designated suppliers.

- Kanban (Japanese for sign) is an inventory control system used in just-in-time (JIT) manufacturing to track production and order new shipments of parts and materials.

- Kanban was developed by Taiichi Ohno, an industrial engineer at Toyota, and uses visual cues to prompt the action needed to keep a process flowing.

- One of the main goals of kanban is to limit the buildup of excess inventory at any point on the production line.

- Kanban also strives to limit bottlenecks by promoting communication and information sharing between individuals and departments.

- Successful implementation of kanban may lead to reduced expenses, greater customer satisfaction, more efficient processes, and minimized risk due to unforeseen problems.

Idea · To do · Doing · Done
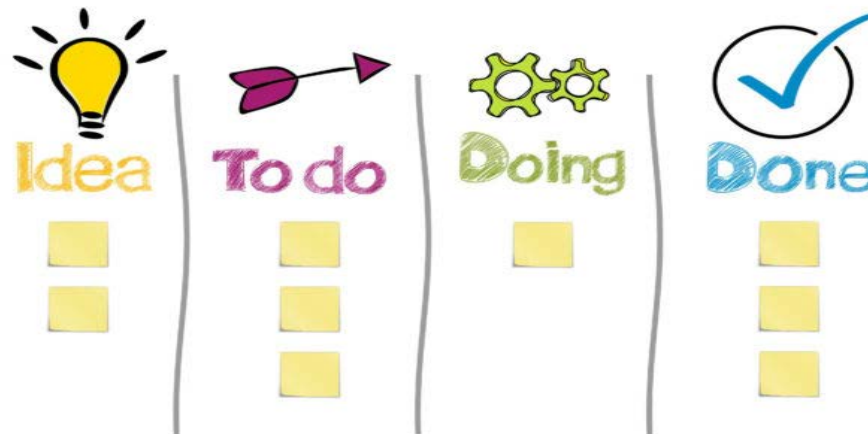
Q72.   Which of the following is a description of Online-to-Offline in net business?

a) It is a business model that provides a basic service or product for free and charges a fee for advanced or special functions.

b) It is a mechanism that can prevent trouble in electronic commerce, such as the case where the price is paid but the product is not delivered or the case where the product is sent but the price is not paid.

c) It is a mechanism that leads a customer that uses mobile devices to purchase by guiding the customer from a virtual store to a real store or from a real store to a virtual store

d) It is a scheme that starts production of the final product after receiving the order from a customer, in order to realize customization according to customer specifications.

- Online-to-offline (O2O) commerce is a business strategy that draws potential customers from online channels to make purchases in physical stores.

- Online-to-offline (O2O) commerce identifies customers in the online space, such as through emails and Internet advertising, and then uses a variety of tools and approaches to entice the customers to leave the online space.
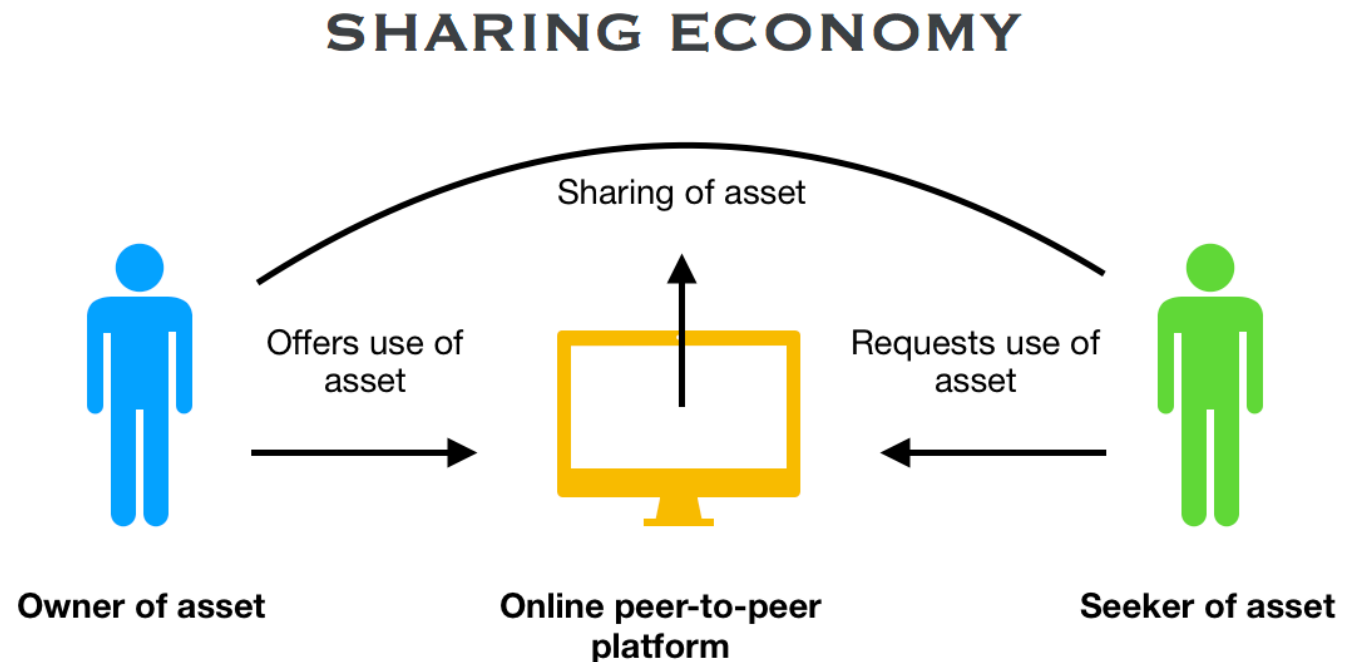
Q73. A smart meter is a highly functional electricity meter with a function for communications and a function for the management of other devices. Which of the following is **not appropriate** as the purpose of installing a smart meter?

a) Continuing the power supply for a fixed amount of time by functioning as an auxiliary power source at the time of a power failure

b) Improving the efficiency of meter reading work through automatic meter reading

c) Increasing awareness of power-saving through visualization of the amount of power consumption

d) Restraining peak power through control over power demand by using demand response

Q74. Which of the following is an explanation of a sharing economy?

a) It is a concept by which efficient management and operation of renewable energy and urban infrastructure are performed by using IT, which leads to an improvement in the quality of people's lives and helps achieve continuous economic growth.

b) It is a concept by which the productivity of an entire economy increases as a result of utilizing IT, and the demand-and-supply gap is eliminated via the progress of SCM, which leads to sustainable growth free from inflation.

c) It is a mechanism by which over-the-counter and Internet sales are combined in a business transaction, and the strong points of both are utilized and linked to expanding overall sales.

d) It is a mechanism mainly between individuals to share, lend, or borrow idle assets owned by individuals by utilizing the community functions of social media.

- A sharing economy can be described as an economic model in which goods and resources are shared by individuals and groups in a collaborative way such that physical assets become services.

- The sharing economy enables people and organizations to earn profits from underutilized resources.

- Technology has assisted the sharing economy's growth to its present level, and the momentum will accelerate with more digital connections.

SHARING ECONOMY

Sharing of asset

Offers use of asset

Requests use of asset

Owner of asset

Online peer-to-peer platform

Seeker of asset

Q75. Which of the following is a management organization that has the characteristic of both project and functional organizations being able to flexibly respond to changes in the business environment?

a) Divisional organization

b) Hierarchical organization

c) Line and staff organization

d) Matrix organization

A matrix organization is a management organization that establishes an exchange between project and functional organizations in order to flexibly respond to changes in the business environment. However, members of this type of organization must maintain a high level of responsibility and be flexible to adapt because there will be an overlap of permissions and responsibilities with other organizations. This may lead to a collapse of the "centralization of command."
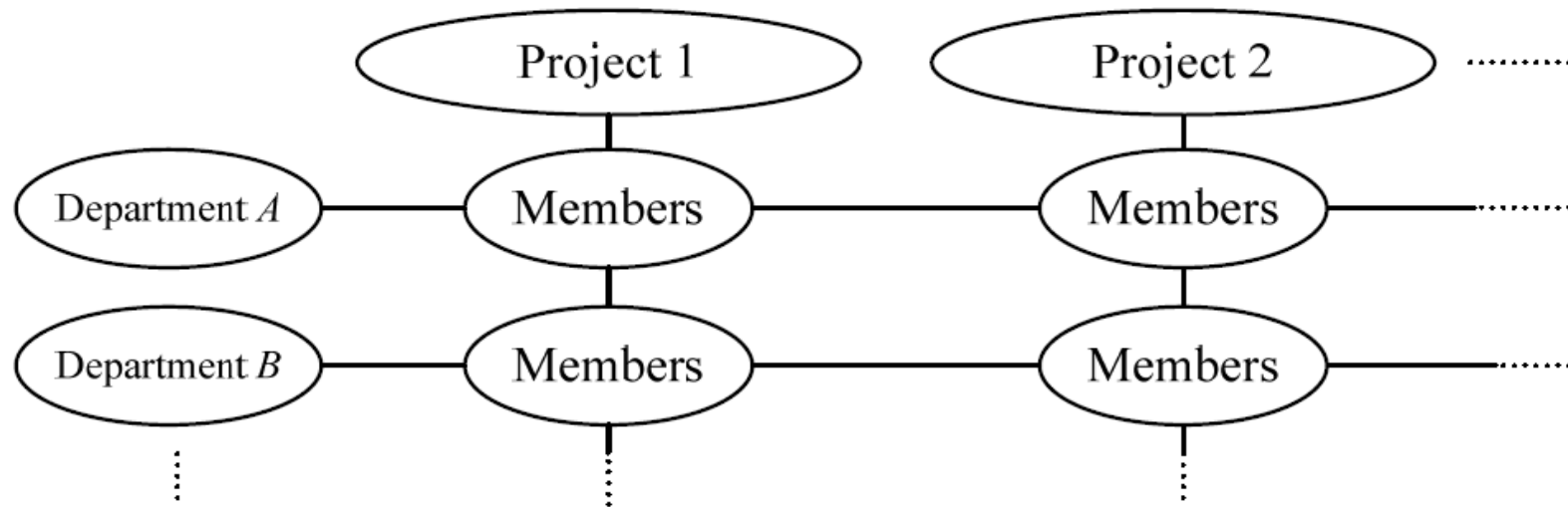
Q76. Which of the following is a process of discovering useful patterns and relationships by the analysis of large volumes of data?

a) Brainstorming

b) Data mining

c) Decision tree

d) Document analysis

Q77. Which of the following is a chart that represents values over a period (frequently one year) and shows simultaneously monthly figures (or weekly or daily), cumulative totals, and the moving averages?

a) Pie intersection chart

b) Radar chart

c) SD chart

d) Z chart (Z graph)

Z chart (Z graph)
This is a chart that represents individual numeric values, their cumulative total, and the difference in compared cumulative values by using a line graph. For example, with sales volume by month at the base, each month's cumulative sales can be represented with a line graph rising from left to right. In addition, for each month, total 1-year sales for the year up to and including that month can be shown on a line graph. This can be used to check the company's sales record by seeing whether the line is rising or declining.

Radar chart

This is a chart that sets a standard form for multiple evaluation items, plots ratios against those standards, and represents the balance among items by a polygonal shape connected with lines. For example, when food prices in Tokyo are set to 1 (i.e., 100%) for displaying food prices in New York on a radar chart, it allows an understanding of the variance (i.e., difference) in the balance.

SD chart

This is a chart that is used to indicate impressions or feelings with respect to certain survey items. At both ends of multiple horizontal axes, the chart places antonyms of the characteristics to be evaluated, divides the evaluation of the degree of each characteristic into several levels, and connects the points that indicate the relevant degrees to depict a psychological state, an impression, and so on.

Pie intersection chart

This is a chart that represents the mutual relationships among elements or items through the intersections of multiple circles, with each circle indicating one element or item. The overlapping portions of circles indicate elements or items that are shared between those circles.

Q78. Company A purchased a machine for the original cost of $126,000. The salvage value after 6 years is $6,000. What is the annual depreciation expense (in dollars) by using the straight-line method?

a) 12,000   b) 20,000   c) 21,000   d) 36,000

The straight line depreciation formula for an asset is as follows:

$$\text{Annual Depreciation Expense} = \frac{(\text{Cost of the Asset} - \text{Salvage Value})}{\text{Useful Life of the Asset}}$$

Q79. When the estimated probabilities for the number of units that are sold per day for a product are as listed in the table below and the profit per unit is 10 dollars, what is the number of purchased units where the expected value for profit becomes a maximum? Here, a disposal loss of 3 dollars per unit is incurred if the product remains unsold on the day it was purchased.

		Number of sold units			
		4	5	6	7
Number of purchased units	4	100%	-	-	-
	5	30%	70%	-	-
	6	30%	30%	40%	-
	7	30%	30%	30%	10%

a) 4   b) 5   c) 6   d) 7

Q80.　Which of the following is an appropriate description of the scope of software protection under WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)?

a) Algorithms and programming languages are protected.

b) Application programs are protected but system programs such as an OS are not, as the value of the right is included in the hardware cost.

c) Both source programs and object programs are protected.

d) Documents that describe algorithms are protected, but programs created by using the algorithms are not.