April 2016

IT Passport Examination

Questions must be answered in accordance with the following:

Question Nos.	Q1 – Q100
Question Selection	All questions are compulsory.
Examination Time	9:30 – 12:15 (165 minutes)

Instructions:

1. Use a pencil.   If you need to change an answer, erase your previous answer completely and neatly.   Wipe away any eraser debris.

2. Mark your examinee information and your answers in accordance with the instructions below.   Your answer will not be graded if you do not mark properly.   Do not mark nor write on the answer sheet outside of the prescribed places.

    (1) **Examinee Number**
        Write your examinee number in the space provided, and mark the appropriate space below each digit.

    (2) **Date of Birth**
        Write your date of birth (in numbers) exactly as it is printed on your examination admission card, and mark the appropriate space below each digit.

    (3) **Answers**
        Select one answer (a through d) for each question.
        Mark your answers as shown in the following sample question.

    [Sample Question]
    Q1. In which month is the spring IT Passport Examination conducted in 2016?

    a) February   b) March   c) April   d) May

    Since the correct answer is "c)" (April), mark your answer sheet as follows:

    [Sample Answer]

Q1	ⓐ	ⓑ	●	ⓓ

    Do not open the exam booklet until instructed to do so.

    Inquiries about the exam questions will not be answered.

Q1. Which of the following is an appropriate combination of compression techniques that are used for still images, moving images, and audio?

	Still image	Moving image	Audio
a)	GIF	MPEG	MP3
b)	JPEG	MP3	GIF
c)	MP3	JPEG	GIF
d)	MPEG	GIF	MP3

Q2. Which of the following is the logical operation that is equivalent to the truth table below?

Input A	Input B	Output
0	0	0
0	1	0
1	0	0
1	1	1

a) AND   b) NOT   c) OR   d) XOR

Q3. Which of the following is a standard encoding system that is widely used for handling multilingual text and symbols around the world in a single character set?

a) ASCII   b) EBCDIC
c) EUC   d) Unicode

Q4. Which of the following describes the relationship that is always true for two (2) sets A and B? Here, $(X \cap Y)$ represents the part that belongs to both X and Y (intersection set), and $(X \cup Y)$ represents the part that belongs to at least one of X or Y (union set).

a) $(A \cup B)$ is a subset of the complement of $(A \cap B)$.
b) $(A \cup B)$ is a subset of A.
c) $(A \cap B)$ is a subset of $(A \cup B)$.
d) $(A \cap B)$ is a subset of the complement of A.

Q5. In a queue, three elements 33, 27, and 12 are stored (i.e., enqueued) in this order. After another element 45 is enqueued to the queue, two elements are retrieved (i.e., dequeued).   Which of the following is the second element that has been dequeued?

a) 12   b) 27   c) 33   d) 45

Q6. Which of the following is an appropriate description concerning an applet?

a) A document file that is transmitted from a Web site and saved onto the user's PC when the Web browser accesses the Web site
b) A language that is used for creating a Web page
c) A program that is downloaded from a Web server and embedded into a client browser, and then executed in the browser
d) A language that is used for database manipulation such as data addition, modification, deletion, and search

Q7. Which of the following is an appropriate description concerning the Java language?

a) It is a general-purpose language developed mainly for business applications.
b) It is a language developed for scientific and engineering calculations.
c) It is a markup language used for describing Web pages.
d) It is an object-oriented language that provides platform-independent portability.

Q8. In a markup language with the purpose of displaying a screen or printing, it is possible to directly embed not only the body of a document but specifications of the structure and layout of the document, and the font and size of the characters. Which of the following is classified as such a markup language?

a) CASL   b) HTML   c) SQL   d) URL

Q9. Which of the following is the correct comparison of the amount of data?

a) 1 KB < 1 MB < 1 GB < 1 TB
b) 1 KB < 1 MB < 1 TB < 1 GB
c) 1 KB < 1 TB < 1 MB < 1 GB
d) 1 TB < 1 KB < 1 MB < 1 GB

Q10. Which of the following is the most appropriate description concerning a compatible CPU?

a) It can run the OS or the application software that can be run on the original CPU.
b) It must not be developed nor manufactured as long as the patent of the original CPU is valid.
c) A compatible CPU for single-core CPU has been developed, while one for multi-core CPU does not exist.
d) It is a CPU that is intended to improve the performance of an outdated PC, and is not adopted for a new model of PC.

Q11. Which of the following is designed to improve the processing efficiency of a PC by effectively reducing the time for the CPU to access the main memory?

a) SSD   b) Virtual memory
c) Cache memory   d) Defragmentation

Q12. Which of the following is appropriate as a description concerning Plug and Play?

   a) When a peripheral device is connected to a PC, installation and settings of the device driver are performed automatically.
   b) Software for enhancing the functions of application software is installed at a later stage.
   c) Power is supplied from a PC to a peripheral device via a cable connecting them.
   d) A specific program is executed, and the system performance is evaluated on the basis of the time taken for the processing.

Q13. Which of the following is the most appropriate explanation of TCO (Total Cost of Ownership), which is a major factor when any purchasing decision is made for a system?

   a) It is the sum of the operation and management costs incurred after the installation of the system.
   b) It is the sum of the costs required to troubleshoot software and hardware faults that occur after the installation of the system.
   c) It is the sum of the costs incurred during the installation of the system and the operation and management costs incurred after the installation.
   d) It is the sum of the costs incurred during the installation of the system in addition to the planning phase of the system.

Q14. A total of 60,000 hours have passed since a computer system was put into operation. During this operation period, a total of 100 failures occurred, and the system was repaired each time. The last repair was completed at the 60,000th hours. If the MTTR is 60 hours, how many hours is the MTBF of the system during this period?

   a) 480   b) 540   c) 599.4   d) 600
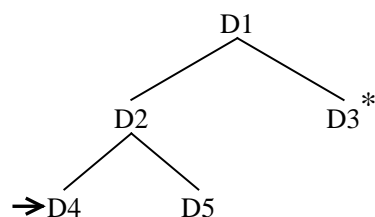
Q15. Which of the following is an appropriate explanation of multitasking?

    a) Several computers connected via a network build a system that work together to achieve a high-performance system.

    b) Several processor cores composed of arithmetic circuits and other control circuits are implemented in a single CPU.

    c) The CPU processing time is allocated to several processes in turn so that the processes can be executed simultaneously.

    d) The same processing is performed for multiple data items by executing a single instruction.

Q16. The diagram below shows the directory structure for a part of a certain file system. Which of the following is the reference from the current directory D3 (indicated with an asterisk "∗") to the file "*a*" under the directory D4 (indicated with an arrow)? Here, files are specified as follows:

[Methods to specify files]
    (1) A file is referenced as "directory name\···\directory name\file name", where the directory names on the path are listed and separated with "\" (backslash) in sequence, followed by "\" and the file name.
    (2) The current directory is represented by "." (one period).
    (3) The directory one level above is represented by ".." (two periods).
    (4) When a reference begins with "\", it is assumed that the root directory is omitted from the beginning of the reference.
    (5) When a reference does not start with "\", ".", or "..", it is assumed that ".\", which means that the reference is under the current directory, is omitted from the beginning of the reference.

a) ..\..\D2\D4\a   b) ..\D2\D4\a

c) D1\D2\D4\a   d) D2\D4\a

Q17. Which of the following is the most appropriate method for restricting the content of database to display in accordance with the needs of each user's business operations?

a) Setting up access rights based on the combination of data and user
b) Distributing a copy of the database limited to each user
c) Setting up a set of data items (columns) dedicated to each user
d) Setting up a password for each record in order to protect data

Q18. Which of the following is the term for the form of using a PC by itself without connecting it to any network?

a) Thin client
b) Single processor
c) Standalone
d) Peer to peer

Q19. Which of the following is an appropriate explanation of plug-in software?

a) Plug-in software bridges differences between OSs, and provides more advanced and specific functions than the OSs.
b) Plug-in software does not work as a standalone program, but can be integrated into applications, such as a Web browser, to enhance their functions.
c) Plug-in software is often included in applications such as a spreadsheet, and allows the users to record and replay the series of operations performed.
d) Plug-in software is provided to replace part of a program for the purpose of modifying functions or fixing bugs.

Q20. Which of the following is a unit that is used to represent "resolution", one of the performance indicators of a display or a printer?

a) bps
b) dpi
c) fps
d) psi

Q21. Which of the following is an e-mail software that is an OSS (Open Source Software)?

    a)   Android   b) Firefox   c) MySQL   d) Thunderbird

Q22. Which of the following is a typical example of a system operating on a super computer?

    a) A Supply Chain Management system that is required for linkage between enterprises
    b) A global weather change forecast system that requires large-scale scientific and technical computing
    c) A banking system that requires a high reliability
    d) An engine control system of a vehicle that requires advanced real-time control

Q23. Which of the following is an appropriate example of benefits of cookies?

    a) When a person is registered beforehand as a reader, only e-mails whose content matches the registered genre and preference are delivered automatically.
    b) When a search is performed by an Internet search engine, in addition to the search results, articles and advertisements with related content are displayed.
    c) When a link to another person's blog is pasted in one's own blog, a notification is sent automatically to the person.
    d) When a user accesses a website that he/she has accessed before, the Web page is displayed according to the settings tailored to him/her.

Q24. Which of the following is an appropriate description concerning the characteristics of video streaming?

    a) It is mandatory to have the data on the server beforehand, and videos of events and sports cannot be distributed while they are being shot.
    b) Deterioration in picture quality due to partial lack of reception data can be completely eliminated.
    c) Preparation time is not required for starting playback of a video, and therefore, the viewer can immediately start watching the video.
    d) Rather than waiting for the entire video data to be downloaded, playback starts as soon as some data has been read.

Q25. From the "Product" table below, products whose supplier is "Company *A*" and the price is 1.4 dollars or more, and products whose supplier is "Company *B*" and the price is 1.7 dollars or less are extracted. Which of the following is a list of all of the obtained product names?

Product

Product code	Product name	Price (dollars)	Supplier
S001	Chocolate	1.5	Company *A*
S002	Cake	2.6	Company *B*
S003	Sponge cake	2.9	Company *C*
S004	Apple	1.9	Company *A*
S005	Strawberry	2.2	Company *B*
S006	Melon	2.8	Company *C*
S007	Juice	1.2	Company *A*
S008	Coffee	1.6	Company *B*
S009	Beer	2.2	Company *C*

a) Cake, Strawberry, Coffee
b) Cake, Strawberry, Juice
c) Chocolate, Apple, Coffee
d) Chocolate, Apple, Juice

Q26. The icon illustrated below, generally called a feed icon, sometimes appears on a web page. Which of the following corresponds to what this icon explains?

a) The website provides data in RSS or Atom format, which outlines information of updates or a summary of the page.
b) The currently displayed web page is a diary-like website operated by a person or a group.
c) The currently displayed web page is bookmarked in the browser on the PC in use.
d) In a blog, when a link has been set up to another blog, the setup of the link has been notified to the link destination.

Q27. Which of the following is a communication network built in a limited area, such as the inside of a building?

a) IP-VPN
b) LAN
c) WAN
d) Wide-area Ethernet

Q28. Which of the following is an appropriate explanation of tethering?

a) A type of virus that replicates itself and spreads infection throughout a network
b) A function of connecting a PC to the Internet by using a communication terminal such as a smartphone like a mobile router
c) A method of detecting a tampering by using a hash function and public key cryptography for electronic data
d) An attack that attempts to illegally manipulate the information in a database by deliberately entering an SQL command in an input field on a web page

Q29. Which of the following is a mechanism by which, if an e-mail is sent to a specific e-mail address, in correspondence to the address, the e-mail with the same content is distributed to multiple e-mail addresses that are already registered?

a) Web mail
b) Chain mail
c) Mailing list
d) Reply mail

Q30. Which of the following is an appropriate description concerning encryption of communication when a website with the URL beginning with "https://" is browsed through a PC browser?

a) Only the communication from the PC to the web server is encrypted.
b) Only the communication from the web server to the PC is encrypted.
c) The bi-directional communication between the web server and PC is encrypted.
d) The direction in which communication will be encrypted depends on the settings of the web server.

Q31. Which of the following is the threat that can be prevented by encrypting data?

a) Deletion of data because of an operational error
b) Social engineering
c) Tapping of communication content
d) DoS attack on the server in which data is stored

Q32. The authentication technology is classified into three (3) types, namely authentication based on one's possession, authentication based on physical characteristics, and authentication based on knowledge. Which of the following is the appropriate classifications of the implementation examples (1) through (3)?

(1) Authentication using an IC card
(2) Authentication based on an ID and password
(3) Authentication based on fingerprint

	(1)	(2)	(3)
a)	Authentication based on one's possession	Authentication based on physical characteristics	Authentication based on knowledge
b)	Authentication based on one's possession	Authentication based on knowledge	Authentication based on physical characteristics
c)	Authentication based on knowledge	Authentication based on one's possession	Authentication based on physical characteristics
d)	Authentication based on knowledge	Authentication based on physical characteristics	Authentication based on one's possession

Q33. Which of the following is an encryption method of wireless LAN?

a) ESSID   b) HTTPS   c) POP3   d) WPA2

Q34. Which of the following is the most appropriate as a set of documents that comprehensively define the approach to information security of a company or an organization, sometimes including information security standards?

a) Information security policy
b) Information security management system
c) Social engineering
d) Risk assessment

Q35. Security risk treatment in ISMS includes risk transfer, risk avoidance, risk acceptance, and risk reduction. Which of the following is an example of risk avoidance?

a) A security measure was taken, which lowered the possibility of problems arising.
b) The company took out insurance in case a problem arises and causes damage.
c) The risk was confirmed to be small, and it was decided that damage would be borne by the company when a problem arises.
d) The company withdrew from the services that carried high risk.

Q36. Among the following lists consisting of the information security terms availability, integrity, confidentiality, and vulnerability, which is a complete list of characteristics that are required by ISMS to be maintained for an organization's information assets?

a) Availability, Integrity
b) Availability, Integrity, Confidentiality
c) Integrity, Confidentiality
d) Integrity, Confidentiality, Vulnerability

Q37. Which of the following is an appropriate description concerning information security education in a company?

a) Re-education is conducted only when the information system is replaced.
b) Education is provided to new employees after they have become familiar with their business operations.
c) Education is provided only to employees who access the information assets.
d) The content is changed according to the business operations, the roles and the responsibilities of employees.

Q38. Which of the following is the most appropriate explanation of the operation that spyware is meant to perform?

a) To destabilize the operation of the OS and software
b) To delete files from the file system without user consent
c) To hijack the browser and forcefully execute a particular operation
d) To collect personal information without being noticed by users

Q39. Which of the following is an appropriate information security measure against harmful software in a PC?

a) Using a 64-bit OS
b) Maintaining the latest version of the virus definition file at all times
c) Defragmenting the hard disk periodically
d) Saving files after compressing them

Q40. Among the following lists of the Web browsing practices (1) through (3), which is the list that contains all the practices that reduce security risks?

(1) Storing the ID and the password on the web browser
(2) Disabling JavaScript
(3) Logging on to the PC with administrator privileges when using the web browser

a) (1), (2)   b) (1), (3)   c) (2)   d) (2), (3)

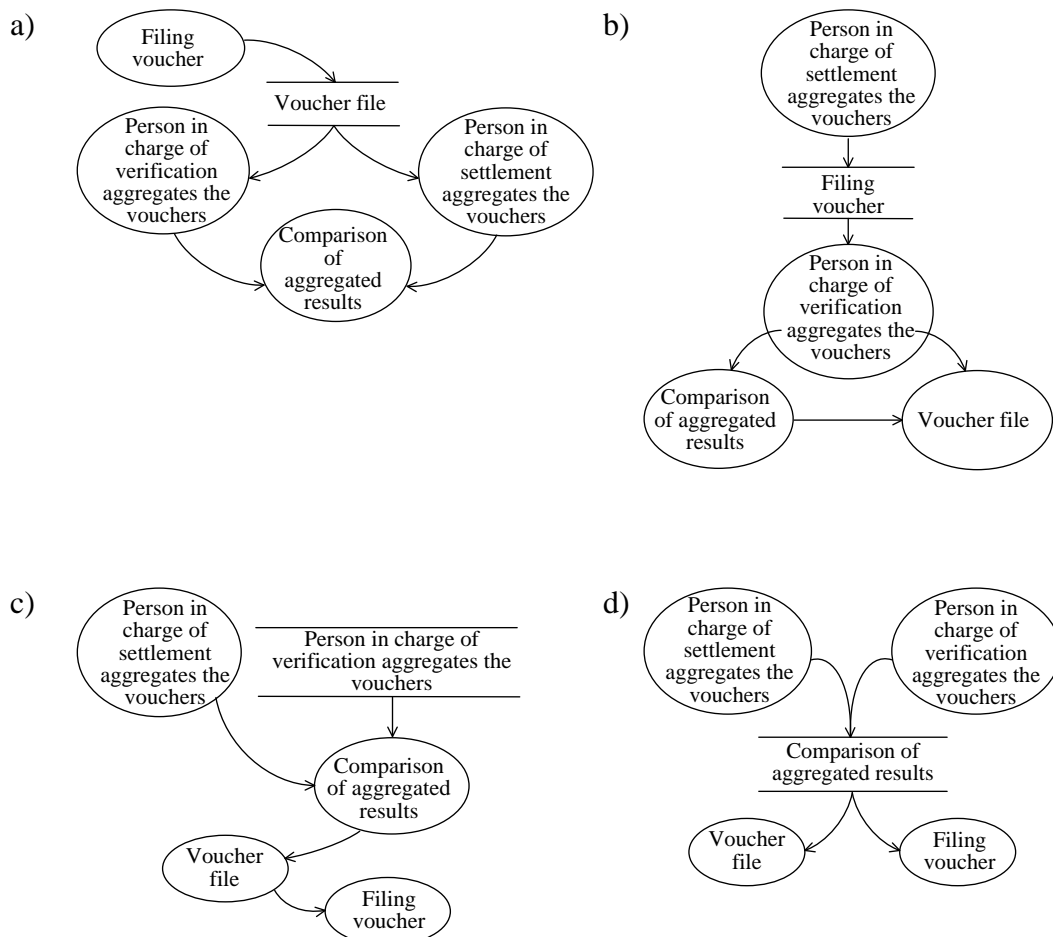**Q41.** Which of the following is an appropriate explanation of symmetric key cryptography?

a) In addition to encryption, it is also used in digital signatures.
b) The decoding speed is generally slower than that of public key cryptography.
c) The RSA algorithm is a typical algorithm.
d) A different key is required for each communication partner.

Q42. Which of the following represents the business process that is described below through a DFD?

[Business process]

1. In daily business activities, the person in charge of accounting files the vouchers that are issued in each department of the company in a voucher file.

2. When the settlement of accounts starts, the person in charge of settlement and the person in charge of verification aggregate the filed vouchers separately, and two results are compared.

Q43. Which of the following is the most appropriate objective of introducing SNS in an enterprise?

a) To reduce employees' labor for scheduling, such as setting up meetings
b) To reduce the cost and time of business trips by having relevant persons at one (1) location in each office, and conducting a meeting while the meeting attendees and material are displayed on a screen
c) To form human networks, which are beneficial for business, through communities on network
d) To reduce the labor for carrying documents in the procedures involving multiple employees, such as managerial approvals.

Q44. Which of the following is an item that is determined when computerization planning is created on the basis of a company's information system strategy?

a) Development schedule
b) Management objectives
c) Input and output screen layout
d) Hardware configuration

Q45. Which of the following is the appropriate procedure for selecting a contractor for system development?

A: Issuance of RFP
B: Conclusion of contracting agreement
C: Determination of contractor
D: Evaluation of proposals

a) $A \rightarrow C \rightarrow D \rightarrow B$
b) $A \rightarrow D \rightarrow C \rightarrow B$
c) $C \rightarrow A \rightarrow B \rightarrow D$
d) $C \rightarrow B \rightarrow A \rightarrow D$

Q46. When the software life cycle is divided into the planning process, requirements definition process, development process, and operation process, which of the following is an appropriate activity in the requirements definition process?

a) Business process and system transition
b) Computerization planning
c) Software detailed design
d) Stakeholders' needs identification

Q47. Which of the following is the most appropriate purpose of creating an RFP?

    a) To provide the estimated outsourcing amount to vendors when development is outsourced

    b) To obtain information about the most appropriate advanced technology for future system development

    c) To standardize procurement procedures, such as in-house production, development outsourcing, and product purchase

    d) To request a written proposal to vendors, and appropriately select an outsourcee

Q48. For software that started full operation on January 1 last year, the number of maintenance activities was added up for each month from January to December, and the result is shown in the graph below. Which of the following is the most appropriate set of maintenance activities corresponding to factor *A* in the graph?

Number of activities not corresponding to factor *A*

Number of activities corresponding to factor *A*
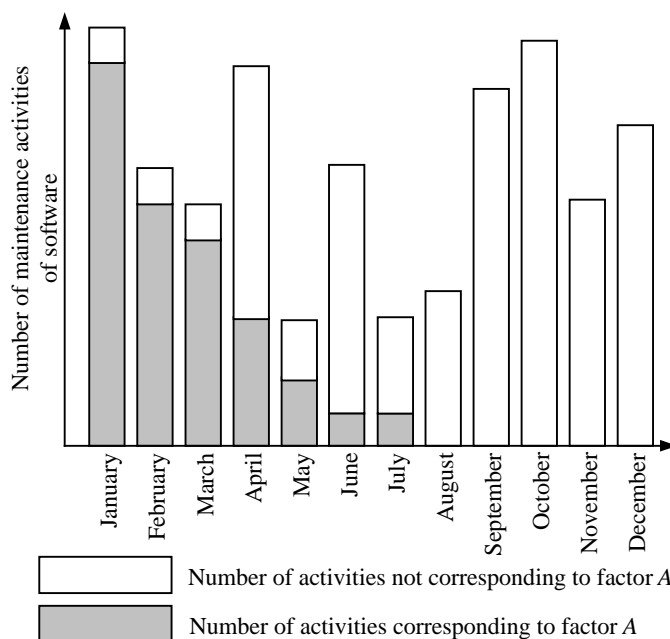
    a) Activities concerning a hardware upgrade that was performed in June last year

    b) Activities responding to requests for improvement of software

    c) Activities responding to initial failures of software

    d) Activities concerning data addition that is performed every April

Q49. In the process of system requirements definition, which of the following is an appropriate evaluation criteria for system requirements?

a) Consistency with results of system integration test
b) Consistency with needs of system users
c) Appropriateness of the design method used
d) Coverage of test cases

Q50. Mr. *A*, a participant in system testing, prepares terminal input data and form output data for major transactions in the department for purpose of verification. Which of the following is the testing technique that Mr. *A* is seeking to implement?

a) Inspection
b) Walk-through
c) Black-box testing
d) White-box testing

Q51. A company creating an information system for its own use outsourced the development of the system. Which of the following is an appropriate description concerning the acceptance testing?

a) If the contractor does not report defects in its system testing, the company will accept the system, without performing acceptance testing.
b) The company must ask the contractor to plan and implement acceptance testing.
c) The company will perform acceptance testing, with support from the contractor.
d) The company will perform acceptance testing, and the contractor will judge the pass/failure of the results.

Q52. Which of the following is an appropriate description concerning the water fall model known as one of software development models?

a) It is a technique in object oriented development for making improvements through trial and error by repeatedly going back and forth between design and programming.
b) It is a technique for making improvements by repeating the development process for each subsystem while responding to requests from users.
c) It is a technique that divides the processes of system development into stages, and, based upon the output of previous processes, performs later processes in order.
d) It is a technique that creates a prototype at an early stage of system development, and determines requirements and specifications with input from user comments.

Q53. Among the following lists of descriptions *A* through *D*, which is the list that contains all appropriate descriptions concerning quality management in information systems?

A: Continuous initiatives according to the PDCA cycle are effective in improving quality.
B: Systems with more functions are of higher quality.
C: The cost of preventing defects is generally less than the cost of correcting bugs when they occur.
D: Quality can be increased through appropriate design and implementation.

a) *A, B, D*   b) *A, C*   c) *A, C, D*   d) *C, D*

Q54. Which of the following is a diagram that hierarchically breaks down the activities executed by a project team into elements?

a) DFD   b) WBS
c) Arrow diagram   d) Milestone chart

Q55. Quality management in system development projects has a quality planning process, which defines quality requirements and quality standards for deliverables and specifies the methods for achieving them. Which of the following is appropriate to this quality planning process?

a) If deliverables are not exactly the same as those of past system development projects, past quality standards cannot be used as reference.
b) Since schedules have the highest priority in all projects, it is acceptable to shorten the period for reviewing and testing for achieving target quality.
c) Quality should have the highest priory in all projects, and, to enhance the quality of deliverables, constraints should not be placed on the budget.
d) The effects by reductions in reworking, improvement in productivity, improvement of stakeholder satisfaction, and others brought about by activities to achieve targeted quality, and their required costs are to be compared.

Q56. In service level management, continuous improvement for the response time agreed upon between the service provider and user is carried out through the processes shown in the Figure. Which of the following is done during monitoring?
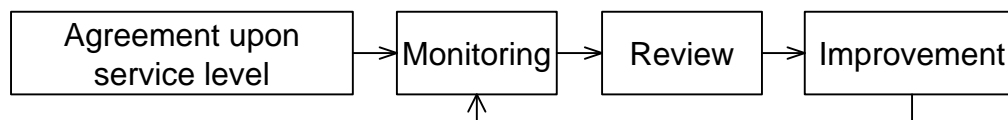
a) Watching response time
b) Evaluation of the actual response time
c) Shortening of response time
d) Setting and changing of objectives of response time

Q57. Which of the following is an explanation of facility management?

a) It refers to the monitoring of compliance with SLAs and their periodical reviewing, for the purpose of maintaining and managing IT service levels.
b) It refers to a method for optimizing ownership, operation, maintenance, etc. of buildings and physical IT infrastructures from a business standpoint.
c) It refers to the continuous improvement of business processes to increase the quality of products and services.
d) It refers to sharing and managing information across the departments and the companies that participate in the series of processes from component procurement to manufacturing, distribution, and sales.

Q58. Within IT service management, IT service continuity management is an activity for minimizing negative impacts of disasters, etc. on business. Which of the following corresponds to the A (Act) of the PDCA cycle in IT service continuity management?

a) Creating recovery plans that define recovery methods for the continuation of IT services
b) Implementing regular education and training for staff members, assuming that disasters occur
c) Reviewing and testing the content of recovery plans to verify them
d) Revising recovery plans if necessary, based on the results of reviewing and testing

Q59. A company implements service level management for the operation of a new system. Which of the following is an appropriate description concerning the goals of service level management?

a) A third party independent from the users and the provider monitors the service to prevent degradation of the service level.
b) The users and the provider agree on the service level, and maintain and improve it.
c) The quality level of the provided service is raised, on the condition that no additional cost is incurred.
d) The users determine the level to which the provided service contributes to the business.

Q60. In IT service management, which of the following is appropriate as a process for resolving the root causes of incidents and preventing their recurrence?

a) Incident management
b) Change management
c) Problem management
d) Release management

Q61. Which of the following is the term for the assignment of employees' role that applies mutual restraint among employees for the purpose of reducing the risk of misconduct or errors in work from the standpoint of internal control?

a) Delegation of authority
b) Segregation of duties
c) Monitoring
d) Diversification of risk

Q62. Which of the following is an appropriate description concerning evaluations in systems audit?

a) Areas for which there is no audit evidence are evaluated through inference.
b) Evaluation must be based on audit evidence.
c) Evaluation is performed according to the views of the system user department.
d) Evaluation is performed according to the views of the audited department.

Q63. Which of the following is the most appropriate as a method for verifying that controls for information system risk are properly implemented and operated?

a) BCP
b) ITIL
c) IT governance
d) Systems audit

Q64. The fixed cost necessary for production and sales of product *A* is 30 million yen annually.   When the unit price of product *A* is 20,000 yen, and the variable cost per unit for production and sales is 5,000 yen, what is the sales quantity of product *A* at the break-even point?

a) 1,500   b) 2,000   c) 4,000   d) 6,000

Q65. Which of the following is the list containing all the items that necessitate the decision of a stockholders' meeting?

A: Election of an auditor
B: Determination of corporate merger
C: Enforcement of an enterprise strategy
D: Election of directors

a) *A*, *B*, *D*   b) *A*, *C*   c) *B*   d) *C*, *D*

Q66. Which of the following is the person who audits the financial documents that are created by a company?

a) Accounting auditor   b) System auditor
c) Legal profession   d) Certified tax accountant

Q67. Which of the following is a method of education and training by which the techniques and knowledge required for working are mastered through daily work experience?

a)   CDP   b) e-learning   c) Off-JT   d) OJT

Q68. Product X is manufactured under the conditions described below. When the yield of Component Y and Component Z is as shown in the table below, how many kilograms of raw material amount A of Component Y is required for manufacturing 300 units of Product X? Here, the yield of Product X is 100%, and all components are newly manufactured.

[Manufacturing conditions of Product X]
- One (1) assembled product X consists of three (3) units of Component Y and one (1) unit of Component Z.
- Component Y and Component Z are manufactured from respective raw material.
- One (1) unit of Component Y or Component Z can be manufactured from one (1) kilogram of the raw material respectively.

Component type	Raw material amount	Yield	Number of completed components
Y	$\boxed{A}$ kg	90%	
Z	600 kg	50%	300 units

Note: The shaded part is not shown.

a) 225   b) 250   c) 900   d) 1,000

Q69. Which of the following is an explanation of a functional organization?

a) It is an organization that is formed only for a fixed period of time by collecting only the functions necessary for resolving a problem, and is dissolved when the problem is resolved.

b) It is an organization in which business operations are divided into expert functions, and each function is configured as a unit.

c) It is an organization that is configured to bear the profit responsibility of the business with a product or region as a unit.

d) It is an organization that is formed to have a vertical and a horizontal structure by combining together units such as the product and functions.

Q70. Which of the following is an explanation of a volume license agreement on software?

a) It is an agreement in which a master copy of software is provided to customers, including companies, who purchase the software in high volume, and the number of permitted installations is defined in advance.

b) It is an agreement in which the location of use is restricted to a specified facility, and the software can be used without limiting the number of computers or users in the facility.

c) It is an agreement in which the use of software is permitted by accepting the terms and conditions of the contract displayed on the screen when the software is downloaded from the Internet.

d) It is an agreement in which standard licensing conditions are defined and a license agreement is automatically considered to be concluded between the right holder and the purchaser when a certain amount of package is unwrapped.

Q71. Which of the following is the coding scheme that can encode a large amount of information into a small area and has an error correction function that enables the code to be read out correctly even when the code cannot be partially read out?

a) ISBN code
b) ITF code
c) QR code
d) Unicode

Q72. Which of the following is an example of an NDA (Non-Disclosure Agreement)?

a) A contract specifying the service content to be provided, which is agreed between the service provider and the customer before the provision of the IT service

b) A contract specifying that the vendor of computer equipment bears the responsibility of transferring the property right, and that the buyer bears the responsibility of paying the price

c) A contract, specifying the obligation of the outsourcer and outsourcee to maintain confidentiality of the secret information of the other party that become known to the other party during system development

d) A contract specifying that a person to whom the installation of a general-purpose package has been outsourced performs the task at his/her own discretion and responsibility, and receives payment upon the completion of the task

Q73. Among the lists of corporate activities *A* through *D*, which of the following is the list that contains all activities concerning the establishment of compliance?

A: Supporting fine art and cultural activities
B: Training employees in the codes of conduct
C: Performing activities for prevention of global desertification
D: Creating a mechanism of internal reporting

a) *A*, *B*　　　　b) *A*, *C*　　　　c) *B*, *D*　　　　d) *C*, *D*

Q74. From the viewpoint of corporate governance, which of the following is the most appropriate method of strengthening the functions of monitoring and supervising the decision-making process of the management?

a) Installing a camera for monitoring the entry and exit of the president's office

b) Periodically requesting a private detective to investigate the conduct of the management

c) Appointing some outside directors

d) Employing law school graduates as members of the internal audit department

Q75. Which of the following is the most appropriate explanation of TOB?

   a) For the purpose of capital participation and acquisition of management rights, purchasing stocks outside of the stock market from large number of shareholders by advertising the desired number of stocks, price, time limit, etc.

   b) For the purpose of acquiring management rights, purchasing stocks and management assets from the parent company, etc. by top management and executive employees

   c) For the purpose of procuring funds required for business, making new stock offerings on the stock market

   d) For the purpose of executing social responsibilities, not only pursuing profit but also contributing to society and taking the environment into account

Q76. Which of the following is an appropriate explanation of BSC (Balanced Scorecard)?

   a) An accounting report that expresses the state of fund procurement and fund management for a specified period

   b) An analytic method to reliably achieve required functions at the lowest overall cost

   c) A corporate performance evaluation method that is carried out from the standpoints of finances, customers, internal business process, and learning and growth

   d) Electronic commerce transactions conducted between companies and consumers

Q77. Which of the following is an appropriate example of basket analysis, which analyzes customers' purchasing behavior?

   a) Analyzing the relationship between sales promotion expenses and net sales, for each product sold at a grocery store

   b) Analyzing the products that customers at convenience stores purchase in combination

   c) Analyzing the profitability of each product category sold at a supermarket

   d) Analyzing the store visit frequency and purchase value of supermarket customers

Q78. In product portfolio management, where products and business to be analyzed are classified into cash cows, stars, dogs, and question marks, which of the following is the appropriate combination of indexes used in the vertical axis and horizontal axis?

A: Customer retention rate   *B*: Market size
C: Market growth rate   *D*: Market share

a) *A, B*   b) *A, C*   c) *B, D*   d) *C, D*

Q79. The business operations of the entire company, such as production, sale, procurement, accounting, and human resources are to be managed in an integrated manner, and the management resources of the entire enterprise are to be optimized. Which of the following is an appropriate information system for implementing this objective?

a) CRM system   b) ERP system
c) HRM system   d) MRP system

Q80. In Company *X*, daily drainage treatment activities are handled, and at the same time new processing equipment is designed by documenting and accumulating the experience and know-how of employees who have managed drainage treatment in the factory over a long period of time. Which of the following is appropriate as a concept of this example?

a) ERP   b) SFA
c) Supply chain management   d) Knowledge management

Q81. Innovation can broadly be classified into process innovation and product innovation. Which of the following is appropriate as a factor of product innovation?

a) An efficient production system   b) Supply chain management
c) Market needs   d) Value chain analysis

Q82. Which of the following is an appropriate general term for computers that are embedded in home electric appliances, such as a microwave oven or a rice cooker?

a) Handheld computer   b) Micro computer

c) Mini computer   d) Mobile computer

Q83. A factory is engaged in assembly production of product P that consists of components A and B. The processing of component A requires component C, and the processing period is one week. The delivery lead times of purchased components B and C are two weeks and three weeks, respectively. Product P can be assembled in one week only after components A and B are both delivered. What is the minimum number of weeks required to produce one unit of product P, including the delivery periods of the components? Here, there is no stock of any of the components.

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

Q84. Among the characteristics required for an embedded system, which of the following is the most appropriate terminology used when a certain process must be completed within a given period of time?

a) Availability   b) Reliability

c) Real-time ability   d) Serviceability

Q85. Which of the following is a form of e-commerce corresponding to an online bookstore or an online shopping mall that is constructed for individuals on the Internet?

a) B to B   b) B to C   c) C to B   d) C to C

Q86. A company wishes to optimize its inventory level of components on the basis of the delivery date and manufacturing volume of final product. Which of the following is the most appropriate policy for achieving this objective?

a) Construction of a CRM system   b) Construction of an MRP system
c) Construction of a POS system   d) Construction of an SFA system

Q87. Which of the following is an appropriate explanation of the SEO, which is used in the Internet?

a) It is a mechanism of transmitting information on the Internet through encryption in order to secure personal information, such as the credit card numbers of customers.
b) It is a community-type service whose purpose is to enable the participants to introduce their friends and acquaintances to other participants, and establish a social connection on the Internet.
c) It is a management information system whose purpose is to secure and maintain the strategic superiority of an organization through differentiation and qualitative improvement of business.
d) It is a method with which, when a user performs a keyword search on the Internet, a specific website is displayed at higher position in the list.

Q88. In order to reduce the lead time of product development, Company *A* in the manufacturing industry shares the design information between processes, and starts the later processes that can be started while the previous processes have not yet completed. Which of the following is this concept based on?

a) FMS   b) MRP
c) Concurrent engineering   d) Just-in-time

Answer questions A through C, each of which has four questions.

Question A Read the following description concerning a project for improving a product, and then answer the four questions.

To differentiate itself from its competitors, Company *X*, a machine tool manufacturer, decides to improve upon currently manufacturing Product *Z*, and launches a project for it (hereinafter called "Project *Z*"). Mr. *A*, who is working in the product development section, is chosen as a member of Project *Z*, and is given an explanation of the status of Project *Z* and the risks of Project *Z* (hereinafter called "risks") by his senior, Mr. *B*.

[Status of Project *Z*]
(1) As compared to a project of the same size undertaken in the past, the number of project members is the same, but the time period is projected to be half.
(2) The task of specifying the functions to be improved is managed and completed by the product planning section.
(3) It has been decided to make the maximum possible use of the components and embedded software of the current Product *Z*. The selection of components and software to be used is complete.
(4) New components will be developed by members who have developed the current Product *Z*.
(5) New software will be developed by members having less development experience.

[Description of risks]
(1) Risks refer to various events that may occur during the project, and have an impact on the delivery date, cost, and quality.
(2) The probability of occurrence of risks and the extent of impact differ for each project, and change during the course of the project.

Due to a risks with a large impact in point (5) of [Status of Project Z], Mr. A thought that it was particularly important to perform schedule management in order to make sure the quality test of the prototype was performed on time, and thus consulted Mr. B. Thereafter, Mr. A was presented with the arrow diagram shown in Figure 1 by a member in charge of developing the software. He noticed that the risks that could occur in the event of a delay in the development have not been taken into consideration, and thought that it would be necessary to take some measures.
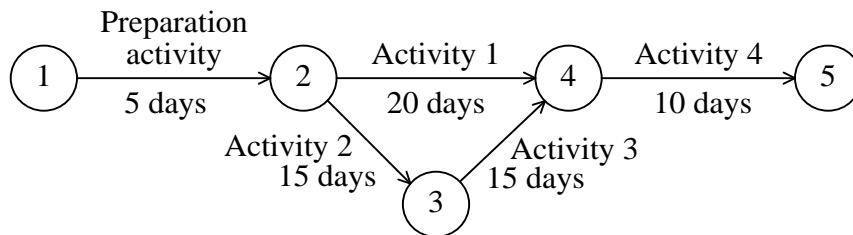

Figure 1   Arrow diagram for software development

[Management]

Q89. If no delay occurs, what is the minimum number of days required to complete the software development shown in Figure 1?

a) 35 b) 40 c) 45 d) 65

[Management]

Q90. Mr. A thought that point (5) of [Status of Project Z] could result in failure of the project, and decided to take preventive measures before proceeding with the development. Which of the following is one (1) of the appropriate preventive measures?

a) Creating the schedule of the current Project Z by referring to the schedules of projects undertaken in the past

b) Collecting the design specifications of software that can be used from the current products

c) Creating a list that compares the functions of Product Z after improvement and the functions of similar products of competitors

d) Educating the software development members with software development techniques they lack

[Management]

Q91. Mr. *A* thought that point (5) of [Status of Project *Z*] could result in a delay in the development schedule, and compiled the estimated delay if a workaround is not implemented, and the cost of workaround. If there is a possibility of a delay in the each activity, what is the minimum cost in yen for implementing workaround to complete the activities as scheduled within the minimum number of days of software development shown in Figure 1?

	Estimated delay	Cost of workaround
Activity 1	+ five (5) days	250,000 yen
Activity 2	+ three (3) days	150,000 yen
Activity 3	+ two (2) days	150,000 yen
Activity 4	+ two (2) days	50,000 yen

   a) 300,000   b) 350,000   c) 450,000   d) 600,000

[Management]

Q92. Mr. *A* is instructed by Mr. *B* to examine if there are any more risks with a large impact other than point (5) of [Status of Project *Z*]. Which of the points (1) through (4) of [Status of Project *Z*] has a risk with the largest impact?

   a) (1)   b) (2)   c) (3)   d) (4)

Read the following description concerning improvement in the transportation expense reimbursement, and then answer the four questions.

In Company *A*, which is an advertisement agency, transportation expenses incurred by customer visits are reimbursed by submitting a transportation expense reimbursement form (hereinafter, form) to the accounting department.

[Flow of current transportation expense reimbursement operation]
 (1) The applicant enters his/her name, his/her employee number, expense code, customer numbers, travel date, description, amount, and the total amount. After it is signed, the form is sent to the office staff member.
 (2) The office staff member checks the application in detail. If there is no mistake, he/she sends the form to the approver. If there is a mistake, the form is returned to the applicant.
 (3) The approver gives the final approval or disapproval. If the content is appropriate, the form is approved and sent to the office staff member. If the content is inappropriate, the form is disapproved and returned to the applicant.
 (4) If the form is returned in (2) or (3), the applicant corrects the form and submits it again to the office staff member.
 (5) The office staff member puts together the approved forms of that day that have been sent from the approver, assigns reference numbers, and sends them to the accounting department.
 (6) The accounting manager settles the payment of the approved forms that have been sent from the office staff member.
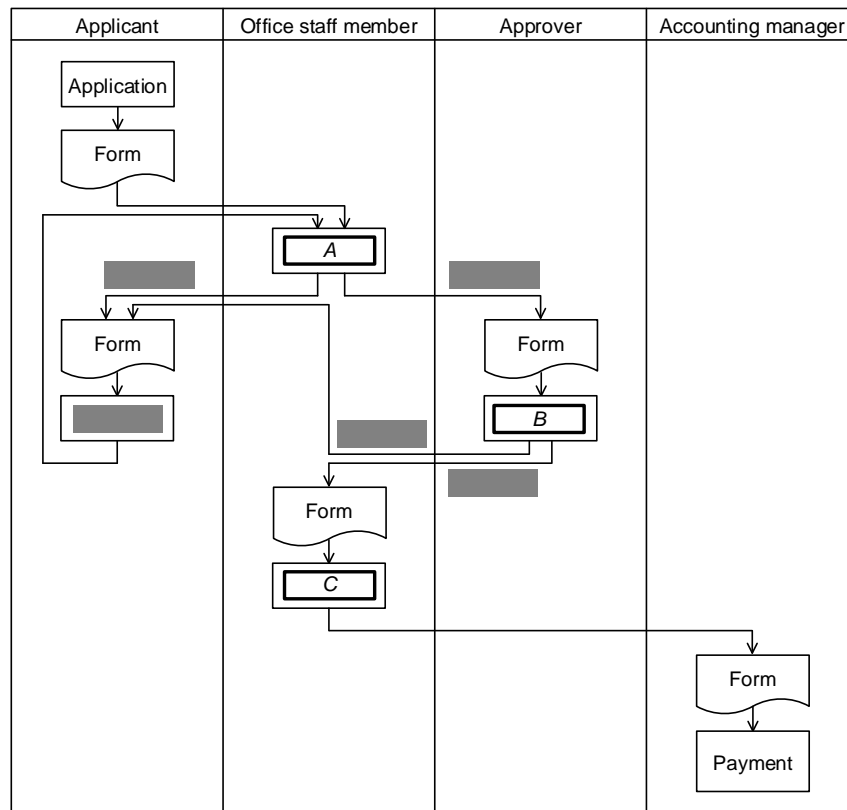
In order to efficiently perform the transportation expense reimbursement, a transportation expense reimbursement system (hereinafter, "reimbursement system") is constructed. The system uses a database and is based on the functional requirements shown below.

[Some of the functional requirements of the reimbursement system]
  (1) Logging on is performed by using the employee number. The applicant name is identified in the employee table using the employee number, and the name is set as a common item on the form screen.
  (2) Customer numbers, travel date, description, and amount are entered as the details to the form screen. The details of several customer visits can be entered in a single submission. Moreover, the total amount is calculated, the expense code is set, and the reference number is assigned automatically. Here, the transportation expense is set automatically as the expense code.
  (3) After the submission, the office staff member checked in detail, and a notification is sent automatically to the approver. The approver selects either "Approve" or "Disapprove" on the final approval screen.
  (4) On the payment screen, the approved submissions are aggregated for each employee, and the payment amount is calculated.

Q93. A diagram has been created to show the flow of the transportation expense reimbursement. Which of the following is an appropriate combination of terms or phrases to be inserted into blanks *A* through *C* in the flowchart?

	Applicant	Office staff member	Approver	Accounting manager
	Application → Form	A		
	Form		Form → B	
		Form → C		
				Form → Payment

Note: The shaded part is not shown.

	A	*B*	*C*
a)	Numbering	Approval	Correction
b)	Correction	Approval	Numbering
c)	Detailed checking	Approval	Numbering
d)	Detailed checking	Numbering	Correction

Q94. Even after a reimbursement system is installed, some of the current form contents that are checked in detail by the staff member cannot be eliminated. Which of the following <u>cannot be eliminated</u>?

    a) Expense code

    b) Total amount

    c) Applicant name and employee number

    d) Amount and description

Q95. The database of the reimbursement system is used to create a transportation expense data table (hereinafter, "data table") sorted by customer and employee, as shown in Figure 1. Which of the following is an appropriate step to be inserted in *D* for creating the data table? Here, the forms to be written in the data table are those for which the application date is the previous month and the approval type is "Approved."

Moreover, the tables used in the reimbursement system are as shown below in Figure 2.

  [Steps for creating the data table]

  (1) From the work sheet, extract data for which the submission date is the previous month and the approval type is "Approved."

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                              D
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  (4) Join the table in (3) with the employee table and the customer table in order to acquire the customer name and the employee name.

Customer_number	Customer_name	Employee_number	Employee_name	Amount
000100	Corporation *B*	2005123	Taro Tanaka	2,500
000100	Corporation *B*	2006211	Taro Suzuki	4,300

Figure 1   Example of transportation expense data table sorted by customer and employee

Work sheet

Reference_ number	Submission_date	Employee_number	Approval_type

Details table

Reference_ number	Detail_number	Customer_number	Travel_date	Description	Amount

Employee table

Employee_number	Employee_name

Customer table

Customer_number	Customer_name	Address	Telephone_number

Note: The primary key is not displayed.

Figure 2　　Tables used in the reimbursement system

a) (2) Join the table created in (1) and the details table by matching reference number.

　(3) From the table created in (2), calculate the total amount for each pair of customer number and employee number, and create a table with customer number, employee number, and total amount.

b) (2) Join the table created in (1) and the details table by matching reference number.

　(3) From the table in (2), calculate the total amount for each customer number, and create a table with customer number and total amount.

c) (2) Join the table created in (1) and the details table by matching reference number.

　(3) From the table in (2), calculate the total amount for each employee number, and create a table with employee number and total amount.

d) (2) From the details table, calculate the total amount for each pair of customer number and employee number, and create a table with customer number, employee number, and total amount.

　(3) Join the table created in (2) and the table created in (1) by matching reference number.

Q96. The work time of each manager is sampled before and after the installation of the reimbursement system, the result is shown below. How many hours is the total reduction in work time of Company *A* per one (1) month on the basis of the result? Here, the working days of Company *A* is 20 days per month, and the average number of submissions in Company *A* is 10 times per day.

[Result of sampling]
 (1) The time required for one (1) submission is reduced from 12 minutes to three (3) minutes.
 (2) The total time that office staff members spend for transportation expense reimbursement in one (1) day is reduced from 48 minutes to 16 minutes.
 (3) The time required for an approver to approve one application is reduced from 72 seconds to 12 seconds.
 (4) The total time that accounting managers spend for transportation expense reimbursement in one (1) month is reduced from 13 hours to one (1) hour.

a) 29   b) 44   c) 56   d) 152

Read the following description concerning tabulation of a monitor survey, and then answer the four questions.

To develop a new product, company *F* hired 100 monitors and conducted a market survey. For three (3) items of performance, price, and design, the monitors were asked whether or not they attached importance to each of these items and they responded "Yes" or "No."

Responses received from monitors were registered in the response file in the record format in Figure 1.

Monitor_name	Performance	Price	Design

Figure 1   Record format of the response file

In the record items "Performance", "Price", and "Design", 1 was recorded if the response to the question was "Yes", and 0 was recorded if the response was "No".

The command below can be used to display the number of records in the response file that matches the condition.

Display_number_of_records(condition)

Here, a complex condition, which is a combination of "and", "or" and [ ], can be specified for the condition. In the evaluation of the condition, the condition inside the brackets [ ] has priority. In addition, another [ ] can be specified inside [ ].

Table 1 shows the results of the command with various conditions.

Table 1   Result of executing the command

Condition	Results of Display_number_of_records command
Performance=1	55
Price=1	60
Design=1	45
[Performance=1] and [Price=1]	30
[Price=1] and [Design=1]	25

[Technology]

Q97. Which of the following does the command below display?

Display_number_of_records([Performance=1] and [Design=0])

   a) Number of monitors that attach importance to both performance and design
   b) Number of monitors that attach importance to the performance, but not the design
   c) Number of monitors that attach importance to either performance or design
   d) Number of monitors that do not attach importance to neither performance nor design

[Technology]

Q98. The sets of persons who attach importance to performance, price, and design are respectively called the "Performance set", "Price set", and "Design set". They are shown with the Venn diagram given in Figure 2. Which of the following are the regions in the Venn diagram that match with the condition of the command below?

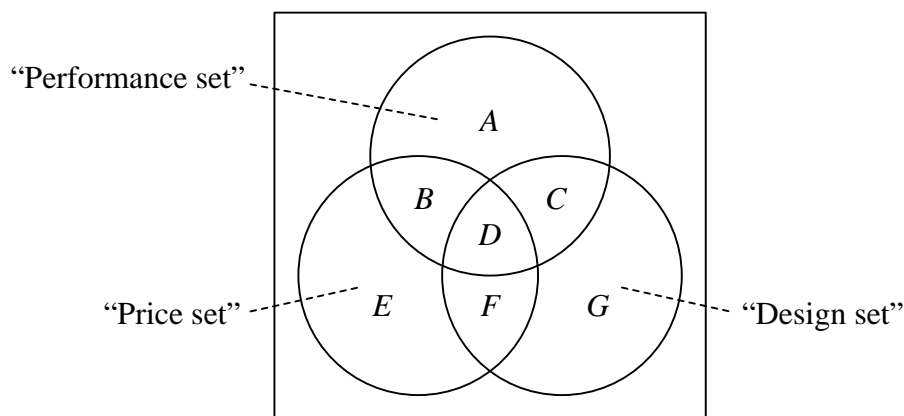Display_number_of_records([[Performance=1] or [Price=1]] and [Design=1])

Figure 2   Venn diagram

a)   *A, B, E*   b) *A, C, F*   c) *B, D*   d) *C, D, F*

[Technology]

Q99. From the results of Table 1, which is displayed when the command below is executed?

Display_number_of_records([Performance=1] or [Price=1])

a) 60   b) 70   c) 85   d) 115

[Technology]

Q100. Which of the following is the command that gives the same result as the result obtained with the procedure given below?

[Procedure]
(1) Execute Display_number_of_records(Price=1), and let the displayed result be w.
(2) Execute Display_number_of_records([Performance=1] and [Price=1]), and let the displayed result be x.
(3) Execute Display_number_of_records([Price=1] and [Design=1]), and let the displayed result be y.
(4) Execute Display_number_of_records([Performance=1] and [Price=1] and [Design=1]), and let the displayed result be z.
(5) Calculate $w - x - y + z$.

a) Display_number_of_records([Performance=0] and [Price=1] and [Design=0])
b) Display_number_of_records([Performance=0] or [Price=1] or [Design=0])
c) Display_number_of_records([Performance=1] and [Price=0] and [Design=1])
d) Display_number_of_records([Performance=1] or [Price=0] or [Design=1])