



October 2019

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 – 11:30 (120 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 fall IT Passport Examination conducted in 2019?

- a) August b) September c) October d) November

Since the correct answer is “c)” (October), mark your answer sheet as follows:

[Sample Answer]

Q1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Do not open the exam booklet until instructed to do so.

Inquiries about the exam questions will not be answered.

Company names and product names appearing in the examination questions are trademarks or registered trademarks of their respective companies. Note that the symbols ® and ™ are not used within.

Answer questions Q1 through Q45 concerning technology.

- Q1.** As shown in Figure 1, there is a box that generates a single output for two inputs. The input in this box is either “Agree” or “Disagree,” and the output of “Agree” is generated only when both inputs are “Agree,” while in other cases the output of “Disagree” is generated. When three inputs are entered into two boxes as shown in Figure 2, which of the following is the correct description concerning the output?

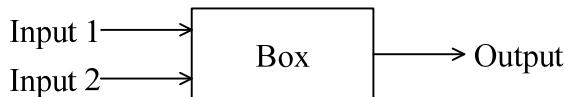


Figure 1

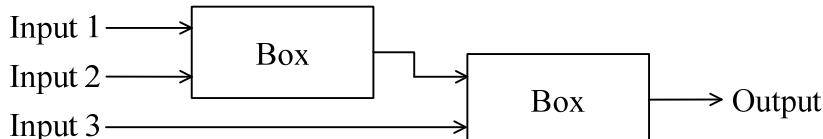


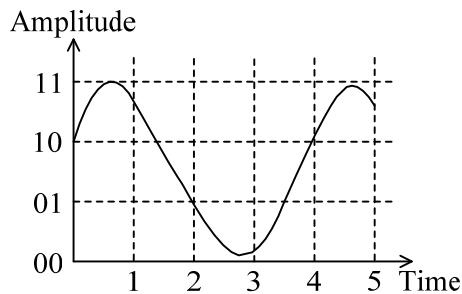
Figure 2

- a) The output of “Agree” is generated at all times when one or more inputs are “Agree.”
- b) The output of “Agree” is generated at all times when two or more inputs are “Agree.”
- c) The output of “Disagree” is generated only when two or more inputs are “Disagree.”
- d) The output of “Agree” is generated only when all three inputs are “Agree.”

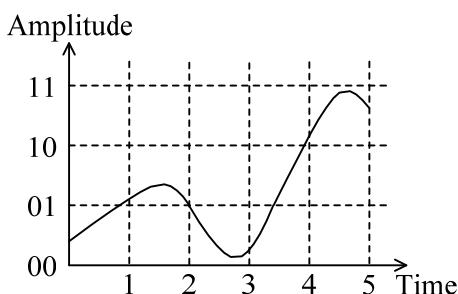
- Q2.** When a sound is recorded in a computer file, it is to be stored as a series of 8-bit encoded data. When the same sound source is sampled at the same sampling frequency and then encoded as a series of 16-bit data in lieu of 8-bit data, which of the following is an appropriate explanation concerning this encoding?

- a) The amplitude of the sound can be recorded more finely.
- b) When the recording time is the same, the amount of data becomes smaller.
- c) The CPU load required to process the recorded data decreases.
- d) The upper limit of the frequency that can be recorded becomes higher.

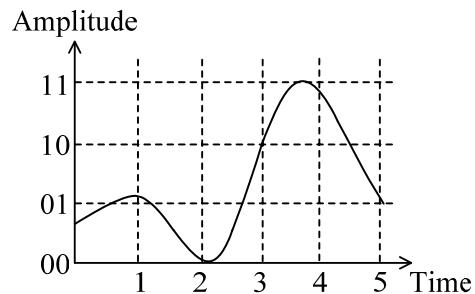
- Q3.** A sound signal is digitized. Sampling is performed at Time 1 through Time 5 in the figure below, and four-level quantization is performed; in other words, the levels closest to the sampling point are selected. After that, two-bit encoding is performed. The result is “11 01 00 10 11”. When digitization is performed in the same way, which of the following figures represents the sound signal that results in “01 00 10 11 01”?



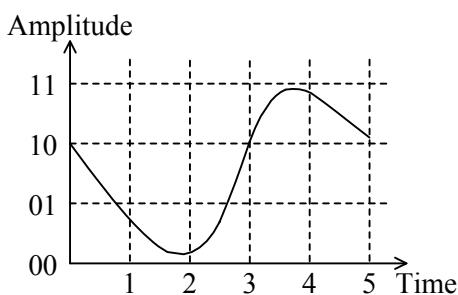
a)



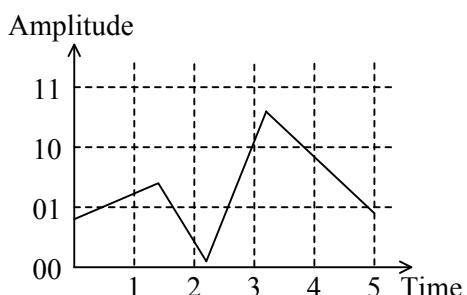
b)



c)



d)



Q4. Which of the following is the appropriate combination of compression technology standards for still images, moving images, and audio?

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

Q5. Which of the following is a term for commands to a computer that are written in a programming language?

- a) PIN code
- b) Source code
- c) Binary code
- d) Character code

Q6. In the data structure called a queue that is suitable for performing first-in first-out (FIFO) processing, values are stored in the order of “8”, “1”, “6”, and “3”, and then a value is removed twice continuously. Which of the following is the value that is obtained by the second removal?

- a) 1
- b) 3
- c) 6
- d) 8

- Q7.** As shown in Figure 1, there is a processing unit which reads two positive integer input values A_1 and A_2 , and then writes two integer output values B_1 and B_2 . B_1 is equal to A_2 , and B_2 is the remainder of A_1 divided by A_2 . In Figure 2, two processing units with the same function as the above are connected in series. When $A_1=15$ and $A_2=6$ are given to the left-hand unit in Figure 2, what is the output value of B_1 for the right-hand unit?

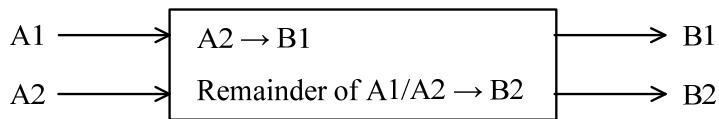


Figure 1

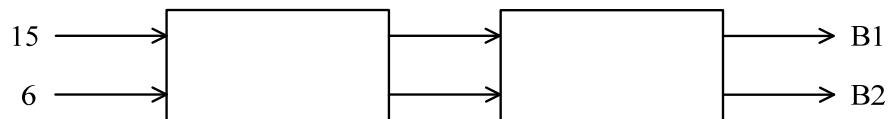


Figure 2

a) 0

b) 3

c) 6

d) 15

- Q8.** A markup language specifies the character color according to the “Syntax and meaning of the markup language definition section” below. When an element (parent) contains another element (child), the child inherits the parent’s specifications, but priority is given to the child-specific specifications if the child and the parent have different values specified for the same attribute. When the text in the “Example” below is displayed according to this rule, which of the following is the appropriate display attribute for the underlined character string? Here, “`character string`” specifies the character string to be emphasized, for example by using bold font.

[Syntax and meaning of the markup language definition section]

(1) Syntax of the definition section

`. name {color specification}`

(2) Meaning

Assigns a color attribute to “name” to display the character string (element) between `<name>` and `</name>` in the specified color.

[Example]

Definition: `. color1 {blue}`

`. color2 {red}`

Body text: `The role of the system administrator is <color1>to promote the use of computers and other information technology to end-user departments. <color2>Increased use of information technology improves the work efficiency of each user</color2>` and can also lead to operational improvements across the entire organization.</color1>

- a) Blue characters, emphasized
- b) Red characters, emphasized
- c) Blue characters, not emphasized
- d) Red characters, not emphasized

Q9. Which of the following is usually created using HTML?

- a) Web browser
- b) Web page
- c) Cookie
- d) SQL program

Q10. Which of the following is an appropriate description concerning the primary and secondary cache memory that a CPU is equipped with?

- a) The primary cache memory has larger capacity than the secondary cache memory.
- b) The secondary cache memory is slower than the main memory in writing and reading.
- c) When the CPU reads data, it first accesses the primary cache memory, and then it accesses the secondary cache memory if no data is available.
- d) All of the data that is required for a process needs to be present on the primary or secondary cache memory when a program starts.

Q11. In the description below concerning the connection between a PC and a peripheral device, which of the following is an appropriate combination of words to be inserted into blanks A and B?

The connection of a new peripheral device to a PC requires A, but if a peripheral devices that supports B function is connected, the A is installed automatically and the device can be used.

	<i>A</i>	<i>B</i>
a)	Device drivers	Plug and play
b)	Device drivers	Plugin
c)	Malware	Plug and play
d)	Malware	Plugin

Q12. 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 patents of the original CPU are 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.

Q13. Which of the following is an appropriate explanation of HDMI?

- a) It is an interface for an AV device that handles the input and output of video, audio, and control signals through a single cable.
- b) It is an interface that makes use of the infrared rays used in the exchange of information between cell phones.
- c) It is a serial interface that connects an external hard disk or such other devices through a cable.
- d) It is a wireless interface that makes use of radio waves and can perform communication even when there is a slight shielding.

Q14. Two (2) HDDs are connected to a server. If only one (1) of the HDDs fails, the operation needs to be able to continue. Which of the following is an appropriate configuration that should be used?

- a) Striping
- b) Data mining
- c) Tethering
- d) Mirroring

Q15. Which of the following includes all the appropriate measures to enable the normal execution of processing even in the event of a failure in part of a system?

- (1) The configuration of HDDs with mirroring
 - (2) The minimization of the frequency of maintenance and inspections after stable operation of the system starts
 - (3) The grouping of multiple redundant network lines into a single high-speed line
 - (4) The redundancy of power supply with the use of UPS (Uninterrupted Power Supply) etc.
- a) (1), (3) b) (1), (4) c) (2), (3) d) (2), (4)

Q16. Which of the following is an appropriate explanation of the hot standby system?

- a) It is a system configuration where a collection of various types of hardware, software, and data on the Internet is provided to the user.
- b) It is a system configuration where a high level of reliability can be obtained by simultaneously operating the two sets of equipment and by always performing the same processing while cross-checking the results.
- c) It is a system configuration where a backup machine is always kept ready in an operable state and is immediately switched into operation at the occurrence of a failure.
- d) It is a system configuration where a backup machine is arranged, and at the occurrence of a failure, the operator in charge starts up the backup machine to switch the production machine to the backup machine.

Q17. The tax-inclusive prices of products *A* and *B* are calculated by using two (2) tax rates that are set in cells D2 and E2 below. The correct formula that should be entered in cell D4 is $\$B4*(1.0+D\$2)$, but a wrong formula $\$B4*(1.0+\$D\$2)$ was entered. When the formula that was entered in cell D4 is copied to cells D5, E4, and E5, which of the following is the numeric value that is displayed in cell E5?

	A	B	C	D	E
1				Tax rate 1	Tax rate 2
2			Tax rate	0.05	0.1
3	Product name	Tax-exclusive price		Tax-inclusive price 1	Tax-inclusive price 2
4	Product <i>A</i>	500			
5	Product <i>B</i>	600			

- a) 525
- b) 550
- c) 630
- d) 660

Q18. Which of the following is an appropriate description concerning Open Source Software (OSS)?

- a) Source code can be edited and then redistributed.
- b) Source code is free of charge, but maintenance and support are charged.
- c) Copyrights are waived, so it can be used without permission.
- d) If the copyright is not waived, the operability must be warranted.

Q19. There is a system where a full backup is made after closing time every Sunday, and an incremental backup is made after closing time on Monday through Saturday. On a Wednesday, a failure happened during business hours, so a decision was made to restore data to the state at the time of closing on Tuesday by using backup files. Which of the following lists all the necessary backup files for restoring data? Here, an incremental backup file means a backup file that contains only the data that has been modified since the previous backup file (a full backup file or an incremental backup file) was made.

- a) A full backup file on Sunday, incremental backup files on Monday and Tuesday
- b) A full backup file on Sunday, an incremental backup file on Tuesday
- c) Incremental backup files on Monday and Tuesday
- d) An incremental backup file on Tuesday

Q20. Which of the following is the most appropriate method for displaying the content of database to a limited extent in accordance with 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

Q21. When a spreadsheet application to create a line graph based on actual sales in the table below is used, the scale range of the vertical axis was automatically set between 0 and 1,500,000 yen. However, as the graph does not show clearly the change of sales over time, the change of sales needs to be more clearly shown without changing the frame size. Which of the following is the most appropriate chart editing operation?

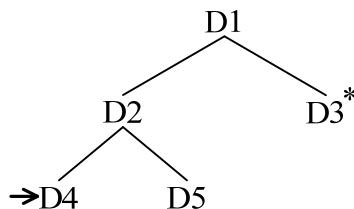
Unit: Yen	
Month	Actual sales
January	1,124,000
February	1,063,000
March	1,092,000
April	1,159,000
May	1,103,000
June	1,201,000
July	1,098,000
August	1,182,000
September	1,135,000
October	1,093,000
November	1,142,000
December	1,220,000

- a) Change the unit of the vertical axis to 1,000 yen, which will make the range from 0 to 1,500 (Unit: Thousand yen).
- b) Change the display range of the vertical axis to 1,000,000–1,300,000 yen.
- c) Convert the line graph to a bar graph.
- d) Add an auxiliary line indicating average sales parallel to the horizontal axis.

Q22. As shown in the directory structure below, when D3 marked by an asterisk (*) is the current directory, which of the following is the appropriate directory path that can designate file A under directory D4 marked by an arrow? Here, a file is designated as follows:

[Method of file designation]

- (1) A file is referenced as “directory name\…\directory name\file name”, where the directory names on the path are listed and separated with “\” in sequence, followed by the file name.
- (2) The current directory is represented by a period “.”.
- (3) A directory that is one level higher is represented by two periods “..”.
- (4) When the path name string begins with a backslash “\”, it is assumed that the root directory is omitted from the beginning of the string.
- (5) When the path name string does not begin with “\”, “.”, or “..”, it is assumed that “ .” for the current directory is omitted from the beginning of the string.



- a) ..\..\D2\D4\A
- b) ..\D2\D4\A
- c) D1\D2\D4\A
- d) D2\D4\A

Q23. Which of the following is a device that is used to recognize handwritten characters and convert them into character codes?

- a) BD-R
- b) CD-R
- c) OCR
- d) OMR

Q24. With regard to the colors printed by a printer, what color is formed logically when cyan, magenta, and yellow are mixed together by subtractive color mixing?

- a) Blue
- b) Red
- c) Black
- d) Green

Q25. Which of the following is an appropriate explanation of raster graphics, which is a method of handling the graphics that is used as a collection of points called pixels in painting software?

- a) It is widely used in CAD.
- b) The type and brightness of a color can be adjusted for each pixel.
- c) The file capacity is constant regardless of the level of resolution.
- d) No jaggies are visible at the edges of shapes even upon enlargement.

Q26. Which of the following is an appropriate description of a rollback in transaction processing?

- a) When a transaction attempts to update shared data, it prohibits another transaction from updating that data.
- b) When a transaction has been successfully processed, it commits an update to the database.
- c) When a transaction has not been successfully processed for some reason, it reverts the database to the state that was present before the transaction was started.
- d) It combines multiple tables into one (1) table by using mutually related columns as keys.

- Q27.** By joining tables “Employees in charge”, “Regions”, and “Customers” that are managed in a relational database, the table A that is shown below is obtained. Which of the following is the table “Customers” that is used for the joining? Here, a solid underline indicates a primary key and a dotted underline indicates a foreign key.

Employees in charge

<u>Employee code</u>	Employee name
----------------------	---------------

Regions

<u>Region code</u>	Region name
--------------------	-------------

A

<u>Customer code</u>	Customer name	Employee name	Region name	Representative name
----------------------	---------------	---------------	-------------	---------------------

a)

<u>Customer code</u>	Customer name	Representative name
----------------------	---------------	---------------------

b)

<u>Customer code</u>	Customer name	Representative name	<u>Employee code</u>
----------------------	---------------	---------------------	----------------------

c)

<u>Customer code</u>	Customer name	Representative name	<u>Region code</u>
----------------------	---------------	---------------------	--------------------

d)

<u>Customer code</u>	Customer name	Representative name	<u>Employee code</u>	<u>Region code</u>
----------------------	---------------	---------------------	----------------------	--------------------

Q28. The result of the Information-Technology Engineers Examination by some of the employees of a company is shown below. In order to manage this table with a relational database, which of the following is an appropriate method to partition the table into two (2) tables? Here, this company has employees with the same family name and first name.

Employee_ID	Employee_name	Date_of_birth	Examination_category	Examination_date	Pass_or_fail
0001	Hanako Sato	1985/4/29	IT Passport	2013/4/21	Pass
0002	Ichiro Suzuki	1990/11/3	Fundamental Information Technology Engineer	2013/4/21	Fail
0003	Jiro Takahashi	1992/2/11	IT Passport	2013/4/21	Fail
0001	Hanako Sato	1985/4/29	Fundamental Information Technology Engineer	2013/10/20	Pass
0003	Jiro Takahashi	1992/2/11	IT Passport	2013/10/20	Pass

- a)
- | | | |
|-------------|---------------|---------------|
| Employee_ID | Employee_name | Date_of_birth |
|-------------|---------------|---------------|
- | | | | |
|-------------|----------------------|------------------|--------------|
| Employee_ID | Examination_category | Examination_date | Pass_or_fail |
|-------------|----------------------|------------------|--------------|
- b)
- | | | |
|-------------|---------------|---------------|
| Employee_ID | Employee_name | Date_of_birth |
|-------------|---------------|---------------|
- | | | | |
|---------------|----------------------|------------------|--------------|
| Employee_name | Examination_category | Examination_date | Pass_or_fail |
|---------------|----------------------|------------------|--------------|
- c)
- | | | | |
|-------------|---------------|---------------|------------------|
| Employee_ID | Employee_name | Date_of_birth | Examination_date |
|-------------|---------------|---------------|------------------|
- | | | | |
|-------------|---------------|----------------------|--------------|
| Employee_ID | Employee_name | Examination_category | Pass_or_fail |
|-------------|---------------|----------------------|--------------|
- d)
- | | | |
|-------------|---------------|------------------|
| Employee_ID | Date_of_birth | Examination_date |
|-------------|---------------|------------------|
- | | | | |
|-------------|---------------|----------------------|--------------|
| Employee_ID | Employee_name | Examination_category | Pass_or_fail |
|-------------|---------------|----------------------|--------------|

Q29. In the description below concerning a relational database, which of the following is an appropriate combination of terms to be inserted into blanks A through C?

Analyze the target business operations, identify the data which is used there, and create **B**, consisting of entities and **A**. On the basis of the **B** created, design **C**.

	A	B	C
a)	instances	E-R diagram	functions
b)	instances	flowchart	tables
c)	relationships	E-R diagram	tables
d)	relationships	flowchart	functions

Q30. Which of the following is an appropriate description of online storage?

- a) A virtual private network that is established via the Internet
- b) A service that lends disk space for storing data via the Internet
- c) Software that is distributed or sold via the Internet
- d) A computer game that multiple users can simultaneously play via the Internet

Q31. Which of the following is an appropriate description of a SIM card?

- a) A card-type device that is used for the purpose of ensuring security in Internet banking and generates a password that can be used only once when a password is required
- b) An IC card that is inserted into a mobile phone for its use and that the phone number and subscriber ID are recorded on
- c) A large-capacity memory card that is used in digital music players or digital cameras for storing contents
- d) A card that is provided with a receiver for digital broadcasting and is used for decoding scrambled digital broadcasting

Q32. Which of the following is a protocol that is used for synchronization of the internal clock of a computer via a network with a server that holds a reference clock?

- a) FTP
- b) NTP
- c) POP
- d) SMTP

Q33. Which of the following is the most appropriate description of a WAN?

- a) A virtual private network that uses the Internet
- b) A network that connects countries, rather than a network that connects various regions within a country
- c) A network that uses a network service from a network operator for connecting geographically separated locations, for example, a head office and its branch
- d) A brand name that is granted only to devices where interconnectivity has been confirmed, by the industrial association that promotes products that support the IEEE 802.11 standard that is used in wireless LANs

Q34. Which of the following is an appropriate description of LTE in wireless communications?

- a) A wireless LAN communication method that enables devices to communicate directly with each other without using any access point
- b) A small-scale network that connects PCs and peripheral devices within a range of several meters
- c) A wireless communication standard for mobile phones to enable faster data communication than 3G
- d) A small base station system for mobile phones to be installed in households and offices where it is difficult for radio waves to penetrate

Q35. A private key and a public key were generated as a key pair when a digital certificate was issued. Which of the following is an appropriate action that should be taken when the private key is leaked?

- a) Reissuing the digital certificate with the key pair that was used
- b) Requesting to the certification authority for invalidation of the digital certificate
- c) Using a key pair that is newly created at the time of reissuing due to the expiration of the validity period
- d) Using the digital certificate as it is, because it is only the private key that was leaked

Q36. Risks on information assets are assessed on the basis of threats and vulnerabilities. Which of the following falls under a threat?

- a) Unencrypted communication
- b) An inconsistency in procedures for handling confidential documents
- c) A door that cannot be locked
- d) An unexpected power failure due to a disaster such as a thunderbolt

Q37. Which of the following is an appropriate description of risk assessment in information security?

- a) Quarantining a virus that has intruded into a PC or a server, as well as minimizing the risk of a spread of the infection
- b) Analyzing and assessing risks on identified assets, and determining whether any action is necessary according to a criteria
- c) Confirming that the user of a system is authentic by using information that has been registered in advance
- d) Calculating the cost effectiveness of installing an information system

Q38. Which of the following is an appropriate description concerning a scheme for authenticating the user of a system?

- a) A scheme where authentication is accomplished by utilizing a password that can be used only once is called a single sign-on.
- b) A scheme where the use of multiple servers or applications is authorized by accomplishing an authentication once is called a one time password.
- c) A scheme where numbers or characters that are placed on positions that the user remembers within a table on the screen are entered as a password is called a matrix authentication.
- d) A scheme where authentication of the user is accomplished by using fingerprints, voiceprint, or other physical characteristics is called a challenge-response authentication.

Q39. Which of the following is a protocol that is used for encrypted communication between a web server and a browser that are connected through HTTPS?

- a) SEO
- b) SPEC
- c) SQL
- d) SSL/TLS

Q40. Which of the following is an appropriate combination of the descriptions (i) through (iii) about threats in information security and the terms below?

- (i) An attack in which a malicious script injected to a web site that displays data that a visitor enters as it is, is executed on the visitor's web browser, and data such as cookies are stolen by a third party
- (ii) A program that infects numerous PCs, executes malicious operations on the PCs by following instructions received via a network, and conducts a coordinated attack
- (iii) A program that is disguised as a useful program, but once installed and executed, performs unauthorized data destruction or leakage

	(i)	(ii)	(iii)
a)	Cross-site scripting	Trojan horse	Bot
b)	Cross-site scripting	Bot	Trojan horse
c)	Targeted attack	Cross-site scripting	Trojan horse
d)	Targeted attack	Trojan horse	Cross-site scripting

Q41. When information is classified and managed according to the protection level in information security, which of the following lists all and only the appropriate methods for the management?

- I The protection level that is assigned to each piece of information is not changed until the information is discarded.
 - II The procedure for handling information is defined for each protection level.
 - III The protection level for each piece of information is determined on the basis of standards that the organization establishes.
 - IV The object that is managed according to the protection level is limited to electronic data and storage media that store it.
- a) I, III b) I, IV c) II, III d) II, IV

Q42. Which of the following is a security standard that is used in a wireless LAN?

- a) Cookie
- b) ESSID
- c) MIME
- d) WPA2

Q43. Which of the following is an appropriate example of biometric authentication?

- a) A user hovers his/her hand over a sensor when he/she uses an ATM, and then authentication is accomplished by matching his/her vein pattern against the preregistered one.
- b) By drawing on the screen of a smartphone a preregistered sequence in a single stroke, the lock on the screen is released.
- c) By requesting the user to answer a question that a machine is unlikely to be able to answer, it is confirmed that a human is doing the operation. For example, the user is requested to choose photos of an outdoor scenery from multiple photos.
- d) By requesting the user to choose images that relate to the user, for example, photos of his/her relatives, from multiple photos, the authentication is accomplished.

Q44. Which of the following is a characteristic of symmetric key cryptography and not of public key cryptography?

- a) Safe communication is possible even if the key used for encryption becomes known to a third party.
- b) Only one key is required even when separate communications must be conducted safely with multiple parties.
- c) The holder of a key can be verified through a digital certificate.
- d) The key that was used for encryption is also used for decryption.

Q45. When risk management in information security is divided into risk identification, risk analysis, risk assessment, and risk treatment, which of the following is included in risk treatment?

- a) Finding risks that exist in an organization
- b) Comparing the level of each risk and risk acceptance criteria, and determining the necessity of implementing controls
- c) Calculating the level of each risk from the probability that the risk will be realized and its impact
- d) Selecting a method to deal with each risk, and creating a plan to implement specific controls

Answer questions Q46 through Q65 concerning management.

Q46. Which of the following corresponds to software maintenance?

- a) A response time that was measured in a system test did not satisfy the requirement, so tuning was performed on the software.
- b) As a result of a software acceptance test, a fault was found, so the orderer requested the developer to fix the software.
- c) A function was found missing in a unit test of a program, so the function was added to the program.
- d) A defect was reported on software that is running on a production system, so the software was modified.

Q47. Which of the following is the order of the requirements definition phases in the system development?

- a) Business requirements definition, system requirements definition, software requirements definition
- b) Business requirements definition, software requirements definition, system requirements definition
- c) System requirements definition, business requirements definition, software requirements definition
- d) System requirements definition, software requirements definition, business requirements definition

Q48. In order to verify the quality of a program, which of the following is a testing technique that sets test cases by analyzing the internal structure of the program?

- a) Regression test
- b) System test
- c) Black box test
- d) White box test

Q49. A software integration test is performed by a staff member in charge of the test, but the test results are different from the description of the test specifications. Under such circumstances, which of the following is an appropriate course of action to be taken by the member?

- a) Reviewing all the test cases including the ones completed successfully by that time
- b) Performing the test again after changing the test cases
- c) Continuing the test after changing the program
- d) Reporting the problem to the developer after recording it

Q50. There is a software program that has been developed in-house by a company and that has been used for many years, but the documentation is insufficient and the maintainability is not good. In order to create documentation for maintenance, the software program was analyzed. What is this method called?

- a) Waterfall model
- b) Spiral model
- c) Prototyping
- d) Reverse engineering

Q51. Knowledge areas in project management include project cost management, project human resource management, project time management, and project quality management. In project quality management of system development, which of the following is an appropriate activity for quantitatively analyzing the quality of deliverables?

- a) Calculating the rate of progress on the basis of the number of units in completed deliverables, and performing a comparison with the planned rate of progress
- b) Clarifying the skills that are required by a member who creates a design document
- c) Performing a comparison of the actual number and the target number of the defective cases that are found in a test
- d) Estimating the development cost in consideration of the scope and the productivity of a program

Q52. In a project team that is required to convey information on a one-to-one basis, when the members increase from six (6) people to ten (10) people, by how many times does the number of paths that is required for communicating information increase?

- a) 1.5
- b) 2.5
- c) 3
- d) 6

Q53. Activities in project management include project cost management, project scope management, project time management, and project integration management. Which of the following is an item that is created in project integration management?

- a) Development schedule for the entire project
- b) List of deliverables for the entire project
- c) Budget document for the entire project
- d) Planning document for executing, monitoring, and controlling the entire project

Q54. When the management of a project is divided into progress management, quality management, and cost management, which of the following is the most appropriate matter to be confirmed in progress management?

- a) Whether an integration test is conducted exhaustively with a variety of viewpoints
- b) The degree that an increase in cost is expected in the future
- c) The degree of the impact that is made on the entire schedule by a delay in an activity
- d) Whether a procedure has been established for a design review for finding defects in the design

Q55. In a development project for a system, there is a plan to create 36 programs with the same size. It was first planned to assign only Mr. A who can create six (6) programs per week, but the plan was changed and it was decided to assign two (2) people: Mr. A, and Mr. B who has half the productivity of Mr. A. When the cost per week for Mr. A and Mr. B is 300 thousand yen and 200 thousand yen respectively, how much is the change in the cost as compared to the original plan? Here, Mr. A and Mr. B perform activities in parallel, and the efficiency of Mr. A and Mr. B are always fixed.

- a) A decrease of 800 thousand yen
- b) A decrease of 300 thousand yen
- c) An increase of 200 thousand yen
- d) An increase of 1,200 thousand yen

Q56. Activities in project management include project time management, project cost management, and project human resource management, and also include project integration management that coordinates those activities. In a system development project, which of the following is an appropriate action in project integration management in a case where it has been decided that the delivery should be advanced?

- a) Considering a change in the sequence of tasks in order to reduce the length of the critical path
- b) Comparing and considering a staff increase and the cost for reducing the scheduled duration, as well as the number of days that can be reduced
- c) Estimating the impact on the cost for a case where the scheduled duration is reduced
- d) Reviewing timings when staff members are assigned and revising the staff plan

Q57. In an activity that is performed in the planning phase of a project, which of the following is a method that identifies all of the activities that need to be performed in the project and organizes them in a hierarchical structure, as well as clarifying the management units of the project?

- a) CRM
- b) ERP
- c) PPM
- d) WBS

Q58. Which of the following is a document where an arrangement is made between a system operator and a user on contents regarding a system, such as “the recovery from a failure shall be 3 hours or less”?

- a) Service level agreement
- b) Software detailed design document
- c) Request for proposal (RFP)
- d) Project charter

Q59. In order to provide an IT service, it is required to maintain and protect the resources such as the building and the facilities in a data center so that the resources are kept in an optimal status. Which of the following is an appropriate description of the maintenance and protection of the building and the facilities?

- a) An agreement is made between the IT vendor and the customer on the level of service regarding the monitoring of unauthorized access.
- b) An inspection is performed in order that a backup power generator can be used when it is required.
- c) The construction plan of a building is developed, and the construction is completed.
- d) Response and primary resolution are performed for inquiries from users about the IT service that is being provided in the data center.

Q60. Which of the following is the purpose of incident management?

- a) Performing activities in order to migrate new software that is used in an IT service to a production environment
- b) Managing a series of activities that are conducted on the basis of a change request about an IT service
- c) Recovering an IT service immediately when a circumstance has occurred that inhibits the IT service, and making the impact to business as small as possible
- d) Managing the items that are required for providing an IT service and information on combinations of the items

Q61. Which of the following is an appropriate case of IT service management about a requirement for the availability of an e-mail service?

- a) Allowing the e-mail service to be used with only a web browser
- b) Allowing the e-mail service to be used anytime except for defined maintenance hours
- c) Preventing e-mails addressed to a user from being read by another user without permission
- d) Preventing sent e-mails from being falsified

Q62. In service level management that is related to the degree of customer satisfaction with a service desk, which of the following is an action that falls under the “A” of the PDCA cycle?

- a) The degree of customer satisfaction is surveyed in accordance with a plan.
- b) The method of measurement and the target value for the degree of customer satisfaction are defined.
- c) The variance between the measured value of the degree of customer satisfaction and its target value is analyzed.
- d) Improvement measures are performed on factors that the target is not achieved for.

Q63. Regarding the roles (i) through (iv) below for establishing appropriate IT governance, which of the following is an appropriate combination of the roles of the management and the person responsible for the information system department?

- (i) Defining the IT governance policy
- (ii) Formulating principles for decisions on investment in computerization
- (iii) Deciding the roles and the rights within the information system department
- (iv) Performing progress management in system development on the basis of a project plan

	The management	The person responsible for the information system department
a)	(i), (ii)	(iii), (iv)
b)	(i), (iii)	(ii), (iv)
c)	(ii), (iii)	(i), (iv)
d)	(ii), (iv)	(i), (iii)

Q64. When an audit that is performed by an auditor is divided into an accounting audit, a business operations audit, a systems audit, and an information security audit, which of the following is the most appropriate description of the business operations audit?

- a) The auditor audits whether the financial status and the business results are accurately written in financial statements.
- b) The auditor audits whether management and operation for safety measures on information assets are performed in an effective manner.
- c) The auditor audits whether the information system is comprehensively inspected and evaluated, and that IT is utilized in an effective and efficient manner.
- d) The auditor audits whether the directors are performing job duties in accordance with laws and the articles of incorporation.

Q65. A food manufacturer is conducting business in accordance with safety standards that are specified by the food industry. As the safety standards are revised, the internal standards of the company are also revised accordingly. Which of the following four (4) objectives of internal control is the objective that this action corresponds to?

- a) Effectiveness and efficiency of business
- b) Reliability of financial reporting
- c) Compliance with laws and regulations that are related to business operations
- d) Protection of assets

Answer questions Q66 through Q100 concerning strategy.

Q66. There are activities *A*, *B*, and *C* that use machines *X* and *Y*, and it is required in all activities that the machines are used in the sequence of machine *X*, machine *Y*. When the use times of machines *X* and *Y* in each activity are as shown in the table below, which of the following is the sequence of the activities where the total time required to complete the three (3) activities becomes minimum? Here, machines *X* and *Y* can be used in parallel as shown in the figure below, but two (2) or more tasks cannot be performed simultaneously with any machine.

Table Use times of machines *X* and *Y* in each activity

	Use time of machine <i>X</i>	Use time of machine <i>Y</i>
Activity <i>A</i>	8 minutes	10 minutes
Activity <i>B</i>	10 minutes	5 minutes
Activity <i>C</i>	6 minutes	8 minutes

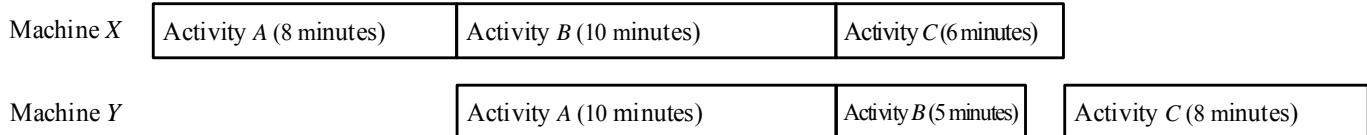


Figure Schedule of using the machines

(Example of when activities are performed in the sequence $A \rightarrow B \rightarrow C$)

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

Q67. A certain product's sales plan and sales result were as shown in the table below. What is the ratio in percentage of the profit result to the profit plan? Here, the decimal fractions of the ratio are truncated.

	Sales plan (X)	Sales result (Y)	Sales result / sales plan (Y/X)
Purchase price (p)	1,000 yen	1,000 yen	100%
Number of purchases (q)	1,000 pieces	1,100 pieces	110%
Sale price (r)	1,500 yen	1,350 yen	90%
Number of sales (s)	1,000 pieces	1,100 pieces	110%
Profit (t = r × s - p × q)	500,000 yen		

Note: The shaded section is not shown.

- a) 77 b) 99 c) 110 d) 129

Q68. At company X, the possibility of a launch being delayed for a new product Y under development and its impact on future performance were analyzed and evaluated. Which of the following corresponds to this initiative?

- a) ABC analysis
 b) SWOT analysis
 c) Environmental assessment
 d) Risk assessment

Q69. Among the items of information concerning management status, which of the following is the list that contains all information which is mandated for disclosure in the annual securities reports of listed companies?

- A: Cash flow statement B: Market share
 C: Income statement D: Balance sheet

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

Q70. Which of the following is the part of a cash flow statement where the income from product sales is reported?

- a) Sales activities
- b) Financial activities
- c) Investment activities
- d) Administrative activities

Q71. Which of the following is the appropriate rule for “brainstorming” that is a method of resolving problems?

- a) Participants should select and present only high-quality ideas among their own ideas.
- b) Participants should criticize another participant’s ideas without hesitation.
- c) Participants should avoid presenting better ideas based on another participant’s.
- d) Participants should listen to free-wheeling opinions, including unique ideas.

Q72. Which of the following is the appropriate explanation of ABC analysis?

- a) A method for systematically identifying the cause of a problem by using a diagram that looks like a fish skeleton
- b) A method for analyzing whether there is a relationship between two variables by using collected data
- c) A method for extracting samples from a population, testing the samples, and determining the quality of the population, based on the number of defects in the samples
- d) A method for ranking the importance of items, based on the cumulative percentage distribution of sales and others in order to clarify the items to be controlled preferentially

Q73. Which of the following codes is used as an international standard for identifying a book?

- a) ISBN
- b) ITF
- c) JAN
- d) QR

Q74. Which of the following is standardized as ISO (International Organization for Standardization) 27000 series?

- a) Content management system
- b) Information security management system
- c) Talent management system
- d) Knowledge management system

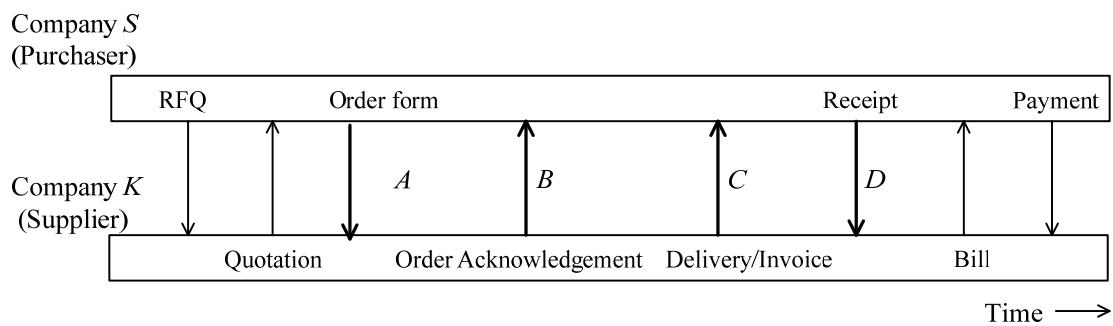
Q75. Which of the following is an example of a Non-Disclosure Agreement (NDA)?

- 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 charges.
- c) A contract, specifying the obligation of the outsourcer and outsourcee to maintain confidentiality of the secret information of a party that becomes 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

Q76. Which of the following is an explanation of free software?

- a) Software that can be installed on any number of computers without limitation in a predetermined location of use
- b) Software that requires the users to pay predetermined charges to the developer if it continues to be used after a certain period of free trial
- c) Software that is commercially available and permitted to be installed on one or more computers
- d) Software that is provided without charge, and can be modified, copied, and distributed without restriction under the license agreement.

Q77. Company S purchases equipment from Company K by using the procedure shown in the diagram below. In this transaction procedure, which of the following is the point at which the sales contract is concluded? Here, once the quotation is provided, the content of the transaction does not change throughout the procedure.



- a) A
- b) B
- c) C
- d) D

Q78. Which of the following is the primary purpose of the ISO 9000 series?

- a) To provide standards for a quality management system that aims to improve customer satisfaction
- b) To provide the latest methodologies and tools for effective and efficient quality management
- c) To provide the successful best practices of software development processes and activities
- d) To provide quality management activities that should be performed in a development project

Q79. A middle-sized electrical manufacturer company *A* divides the products into groups in accordance with their potential and competitive strength in order to determine the priority of investing funds among their lineup. Which of the following is the most appropriate method of analysis for this purpose?

- a) Cluster analysis regarding the prices and the customer bases of the company's products
- b) RFM analysis regarding the customers that purchase the company's products
- c) PPM analysis regarding the shares and the market growth rates of the company's products
- d) Principle component analysis regarding the cause of faults in the company's products

Q80. Airline Company A set out a strategic goal for each of the four (4) viewpoints of a Balanced Scorecard (BSC) to achieve the business strategy. Which of the following corresponds to II? Here, each of I through IV corresponds to one of a) through d).

Four viewpoints	Strategic goals
I	Improved profit ratio
II	Provision of the minimum airfare for the competing route
III	Increased actual operating hours of aircraft
IV	Improved team work among aircraft engineers

- a) Learning and growth viewpoint
- b) Business process viewpoint
- c) Customer viewpoint
- d) Financial viewpoint

Q81. Which of the following is appropriate as information necessary for CRM?

- a) Customer data and customer purchasing history
- b) Blueprint data
- c) Data of experts' knowledge
- d) Day and time of sales, shop, product sold, and quantity sold

Q82. When two or more companies work together under an alliance agreement, which of the following is the most appropriate risk that is expected to be reduced?

- a) Business investment risk
- b) Information leakage risk
- c) Brain drain risk
- d) Fraud risk

Q83. Which of the following is an explanation of the maturity stage in the product life cycle?

- a) It is a stage where there is a sudden increase in sales. Competition intensifies as newcomers enter the market.
- b) It is a stage where sales and profits suddenly drop. In this stage, withdrawal from the market should be considered.
- c) It is a stage where demand growth slows down. Measures such as product quality improvement and style change are taken to maintain market share and secure profits.
- d) It is a stage where the product is marketed to early adopters. Strategies to enhance brand recognition are planned and implemented.

Q84. Although a data warehouse is put into operation, it is seldom used. As a result of user interviews, it is concluded that the users' skill level is lower than expected. Which of the following is an appropriate plan to promote the utilization of the data warehouse?

- a) Sending a notification of usage promotion to users through their managers
- b) Preparing standard templates for data extraction and analysis patterns
- c) Providing data more promptly in real-time to improve data precision
- d) Adding more information that users are likely to need

Q85. Which of the following is the most appropriate term that is sometimes used to mean the creation of an epoch-making business model or a reform in technology?

- a) Innovation
- b) Migration
- c) Real option
- d) Revolution

Q86. Which of the following is a system that collects information that is required for sales management or inventory control by reading or keying in a product code or a buyer's attribute at the time of a sale?

- a) ETC
- b) GPS
- c) POS
- d) SCM

Q87. When the processes from product development to shipment are divided into development, production planning, production, and shipment, which of the following is an appropriate process that can result in labor saving and improved efficiency by the introduction of the Flexible Manufacturing System (FMS)?

- a) Development
- b) Production planning
- c) Production
- d) Shipment

Q88. Which of the following is an appropriate case example of improvement in business operations using CAD?

- a) Automating inventory control by installing an IC tag on each product and performing shipment monitoring
- b) Performing control to ensure that the temperature suitable for production is maintained by installing temperature sensors on the production lines, and monitoring temperature
- c) Converting the design information to a database, and then sharing and reusing the design drawings
- d) Automating the production lines by using robots, and thus realizing an unmanned factory

Q89. Which of the following is an appropriate explanation of CAD, as used in the manufacturing industry?

- a) It calculates the required quantity of materials for a product production plan and orders materials.
- b) It manages information about the components, semi-finished products, quantities, etc. required for the manufacture of products.
- c) It performs unified management of information such as product blueprints and component tables, from design to manufacturing.
- d) It uses computers in product design to improve the productivity and reliability of design specifications.

Q90. 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

Q91. Which of the following is a technology that is defined by some international standards and used for contactless IC cards, such as tickets for public transport?

- a) IrDA
- b) RFID
- c) Bluetooth
- d) Wi-Fi

Q92. Which of the following is an appropriate description in comparison of how to safeguard IC cards and magnetic cards against forgery?

- a) An IC card is more robust against forgery than a magnetic card, because the IC card provides the features of storing and encrypting information in the IC chip.
- b) An IC card is more robust against forgery than a magnetic card, because the IC card uses a two-dimensional code for information recording.
- c) A magnetic card is more robust against forgery than an IC card, because the magnetic card stores information on a magnetic stripe and has a more complicated data protection mechanism.
- d) A magnetic card is more robust against forgery than an IC card, because the magnetic card uses a bar code for information recording.

Q93. Which of the following is an appropriate description of “cloud computing”?

- a) A communication protocol of the Internet
- b) A service model about providing computer resources
- c) A method of software development that can flexibly support changes in the specification
- d) A standard of electronic data exchange that is used in electronic commercial transactions

Q94. From the table shown below that indicates changes in the performance of retail company A with multiple stores, which of the following can be read?

	2015	2016	2017
Net sales (100 million yen)	6,000	5,500	5,000
Operating profit (100 million yen)	600	1,000	1,200
Number of stores	300	250	200

- a) The net sales per one (1) store are decreasing, and the operating profit ratio is increasing.
- b) The net sales per one (1) store are decreasing, and the operating profit ratio is also decreasing.
- c) The net sales per one (1) store are increasing, and the operating profit ratio is also increasing.
- d) The net sales per one (1) store are increasing, and the operating profit ratio is decreasing.

Q95. Which of the following is the term that expresses the disparity in the quality and quantity of information that can be obtained, or in income generated between people who can handle information devices such as computers and those who cannot?

- a) Social networking service
- b) Digital signage
- c) Digital divide
- d) Digital native

Q96. Which of the following is the most appropriate example of using SNS in marketing?

- a) Seamlessly delivering goods ordered over the Internet and receiving payment for the goods
- b) Using commenting functions to let registered members post evaluations of the company's products
- c) Causing the company's website to appear high in the search results of search engines, with the aim of increasing site visitors
- d) Setting a price lower than that of industry competitors to increase customers' desire to purchase

Q97. The table below was created for evaluating proposal documents that were submitted on the basis of an RFP. Which of the following is the company with the highest evaluation points? Here, “Great” represents 4 points, “Good” represents 3 points, “Fair” represents 2 points, and “Poor” represents 1 point in the evaluation points. In addition, each value of the amount, the contents, and the results is weighted and added together to calculate the evaluation points

Evaluation item	Weight	Company A	Company B	Company C	Company D
Amount	3	Fair	Great	Fair	Good
Contents	4	Great	Good	Good	Fair
Results	1	Poor	Poor	Great	Good

- a) Company A
- b) Company B
- c) Company C
- d) Company D

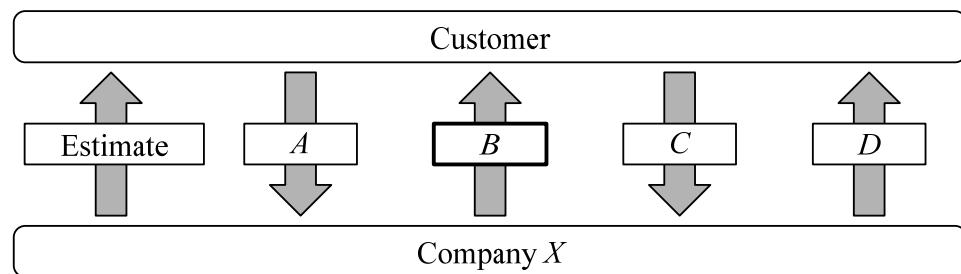
Q98. Which of the following is a process that clarifies the business functions to be newly constructed or reconstructed, and on the basis of this, concretely describes the scope of computerization and the functions in system development?

- a) External design
- b) Internal design
- c) Programming
- d) Requirements definition

Q99. Which of the following is an appropriate approver for the optimization plan of the overall information system of a company?

- a) CIO
- b) Head of RFP creation department
- c) Head of the business operations department handling the mission-critical system
- d) System development project manager

Q100. In the figure below, blanks *A* through *D* represent the transaction process that is used when Company *X* exchanges the forms or documents with the customer. When time progresses from left to right, which of the following should be inserted into blank *B*? Here, each of blanks *A* through *D* corresponds to one of the options “a)” through “d)”.



- a) Acceptance certificate
- b) Invoice
- c) Confirmation of order
- d) Purchase order