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

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

    [Sample Answer]

Q1	ⓐ	ⓑ	●	ⓓ

Q1. Which of the following is obtained by multiplying the binary value 10110 by three?

    a) 111010   b) 111110   c) 1000010   d) 10110000

Q2. Which of the following is a search condition for the black area of the Venn diagram shown below?
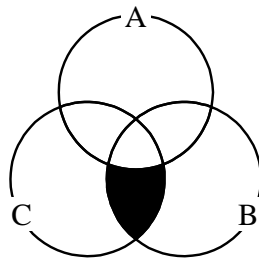
  a) (not A) and B and C   b) (not A) and (B or C)

  c) (not A) or (B and C)   d) (not A) or (B or C)

Q3. In the sales campaign for a certain product, a full-page advertisement is run a total of three times in three magazines *A*, *B*, and *C*.   When the effects expected from running a full-page advertisement zero to three times in each of the magazines are as shown in the table below, how many times should the advertisement be run in magazine *A* to gain the largest possible effect?   Here, the effects of the advertisements placed in the individual magazines are independent of one another, and the effects from multiple magazines can be calculated by simply adding the individual effects.

Number of times that the full-page advertisement is run	Zero times	One time	Two times	Three times
Effect of magazine *A*	0	2	7	7
Effect of magazine *B*	0	1	6	10
Effect of magazine *C*	0	5	8	9

  a) 0   b) 1   c) 2   d) 3

Q4. Which of the following is an appropriate explanation of an algorithm that is used on a computer?

a) A generic term for artificial languages used to enable a computer to perform a series of operations
b) A processing procedure for enabling a computer to accomplish a specific purpose
c) Designing of buildings or industrial products with the assistance of a computer
d) Software for translating a program into a machine language that can be directly executed by a computer

Q5. Which of the following is an appropriate description concerning HTML?

a) It is a markup language that can specify the logical structure and layout of a Web page by using tags.
b) It is a script language that can describe the program or processing steps executed on a browser.
c) It is a communication protocol that is used between a browser and a Web server.
d) It is a markup language that enables users to describe the meaning and structure of data by defining their own unique tags.

Q6. Which of the following is the method for describing the logical structure of a sentence in XML?

a) Enclosing the sentence, clauses, and other elements by using double quotes ("")
b) Separating the sentence, clauses, and other elements by using commas
c) Enclosing the sentence, clauses, and other elements by using tags
d) Separating the sentence, clauses, and other elements by using tabs

Q7. Which of the following is an appropriate explanation of Java?

  a) It is an interpreter-type object-oriented language developed in the 1970s and includes an integrated development environment with editor and debugger as well as OS functions.

  b) It incorporates object-oriented concepts, such as class and inheritance, into the programming language C, and has upper compatibility with C.

  c) It is a markup language used on the Web and describes the document structure by using tags.   It enables the creation of hypertext that links text, movies, etc.

  d) It is an object-oriented language, and source code is compiled into a format called bytecode that can be executed on a JVM (Java Virtual Machine).

Q8. There is a series of numbered boxes stacked as shown in the figure below.   The operations described in the table below are performed in the sequence of operations 1 through 4.   When the operation 4 is completed, which of the following shows the status of the stacked boxes?

Table

	Operation	Description
4	Operation 1	Take two boxes from the top, add the numbers on the boxes, write the sum on a new box, and then put it on the top.
3		
2	Operation 2	Write the number 3 on a new box, and then put it on the top.
2		
1	Operation 3	Take three boxes from the top, calculate the average, write the average value on a new box, and then put it on the top.
Fig.	Operation 4	Take two boxes from the top, calculate the absolute value of the difference between the numbers on the boxes, write the absolute value on a new box, and then put it on the top.

a)

0

b)

2
1

c)

4
2
1

d)

1
2
2
1

Q9. Which of the following is an explanation of a hot plug?

a) A function that enables attachment or detachment of a peripheral device while PC power remains on
b) Software that is installed afterwards in order to enhance the functions of application software
c) A mechanism of supplying power from a PC to a peripheral device via a cable connected to the peripheral device
d) A technique of executing a specific program and evaluating system performance on the basis of the time taken for the processing

Q10. Which of the following is an appropriate description concerning clock frequency of CPU?

a) The CPUs which have the same clock frequency are equal in performance, regardless of whether they are 32-bit or 64-bit.
b) The CPU with higher clock frequency gives higher heat generation than others in the same type of CPU, so heat dissipation becomes important.
c) Clock frequency and network transfer rate are in direct proportion when the machine is connected to the network.
d) For a multi-core processor, the throughput does not depend on the clock frequency.

Q11. Which of the following is an appropriate description concerning flash memory?

a) It is used as read-only storage once data is written.
b) No power supply is required to retain stored data.
c) It is not used for digital cameras because of the difficulty of downsizing.
d) Data is read or written using laser light.

Q12. Which of the following is a DVD in which users can write data, but cannot rewrite data?

a) DVD-R
b) DVD-RAM
c) DVD-ROM
d) DVD-RW

Q13. Concerning configuration methods *A* through *C* for systems that are composed of two (2) sets of devices, which of the following is the list in ascending order, from left to right, of service downtime that is caused by a fault of one of the two (2) sets?

A Dual system
B Duplex system (cold standby method)
C Duplex system (hot standby method)

a) Fault of one (1) device in *A*, Fault of the primary device in *C*, Fault of the primary device in *B*
b) Fault of the primary device in *B*, Fault of one (1) device in *A*, Fault of the primary device in *C*
c) Fault of the primary device in *C*, Fault of one (1) device in *A*, Fault of the primary device in *B*
d) Fault of the primary device in *C*, Fault of the primary device in *B*, Fault of one (1) device in *A*

Q14. Which of the following is an appropriate explanation of the hot standby system?

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

Q15. When a computer system has operated for 1,200 hours, the status of the normal operation time and the repair time is as shown in the table below.　What is the value of MTTR (Mean Time To Repair, in hours) of the system?

| Elapsed time (Hours)			Status
0	through	250	Normal operation
250	through	265	Repair time
265	through	580	Normal operation
580	through	600	Repair time
600	through	990	Normal operation
990	through	1,000	Repair time
1,000	through	1,200	Normal operation

a)　10　　　　　　b)　15　　　　　　c)　20　　　　　　d)　45

Q16. When a record in a file is modified, which of the following is an appropriate way of identifying the modified contents?

a)　Keeping a record of the size and the modified date of a file
b)　Keeping a copy of a file and comparing it to the modified one later
c)　Keeping a record of the number of records into the file
d)　Keeping records sorted in ascending order of the key field

Q17. In a Web server, five (5) directories have a hierarchical structure as shown in the figure below. In an HTML document stored in directory *B,* which of the following references the file img.jpg stored in the directory *E*? Here, directories and files are referenced using the method described below.

[Method of referencing directories and 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 "/" in sequence, followed by the file name.
    (2) The current directory is represented by "." (a period).
    (3) The directory one level above is represented by ".." (two (2) periods).
    (4) When a reference begins with a "/", it is assumed that the root directory has been omitted from the beginning of the reference.
    (5) When a reference does not start with "/", "." (a period), or ".." (two (2) periods), it is assumed that "./" for the current directory has been omitted from the beginning of the reference.
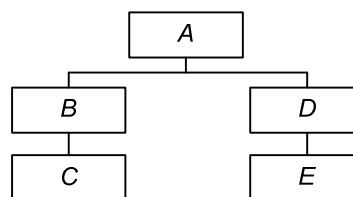
  a) *../A/D/E*/img.jpg   b) *../D/E*/img.jpg
  c) *./A/D/E*/img.jpg   d) *./D/E*/img.jpg

Q18. Which of the following is an appropriate explanation concerning a deadlock?

  a) It is a state in which the processes of a computer are prohibited from getting intentional or accidental access to information that usually must not be accessed.
  b) It is a state in which, if the authentication of a user fails more than the limited number of times, the user is prohibited from accessing the computer.
  c) It is a state in which, when shared resources are exclusively used, two processes are endlessly waiting for each other to release the lock of a shared resource.
  d) It is a state in which processes in the ready state under a multi-programming environment have used up the CPU time allocated by the OS.

Q19. The types of programs that are executed at the startup time of a PC are generally classified into three categories: BIOS, OS, and resident applications. Which of the following is the list that is arranged in the sequence of the execution of the programs?

a) BIOS → OS → Resident applications
b) OS → BIOS → Resident applications
c) OS → Resident applications → BIOS
d) Resident applications → BIOS → OS

Q20. Which of the following is the purpose of the virtual memory system that is known as one of the functions provided by an OS?

a) To prevent an application program from accessing the protected area on main memory used by the OS
b) To reduce electricity consumption during the idle state, by stopping the power supply after data is written from main memory to external storage
c) To make it possible to execute a program even if the program requires more storage capacity than main memory
d) To accelerate CPU processing with the assistance of a higher speed storage device than main memory

Q21. 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

Q22. Which of the following is the term for the design that is intended to provide comfortable usability to as many people as possible, regardless of differences in culture, language, age, gender, presence or absence of disability, or capability?

a) Barrier-free design   b) Fail-safe
c) Foolproof   d) Universal design

Q23. On a display screen, various colors are created through additive color mixing with three colors, namely red, green, and blue.   When the red color, green color, and blue color are mixed uniformly, which of the following is the color that is formed?

a) Red-violet   b) Yellow
c) White   d) Blueish green

Q24. Transactions 1 (One) through 4 (Four) are processed in the order of the Process list below. One of the transactions ended abnormally in the middle. As a result of canceling and rolling back the transaction, data *A* and data *B* exist. Which of the following is the transaction that ended abnormally? Here, if a transaction that ended normally, it will be committed and the next transaction, if any, will be performed if it exists. If a transaction ended abnormally, the subsequent transactions will not be performed.

[Process list]

Order of process	Transaction name	Process
1	Transaction 1	Creating data *A*
2	Transaction 2	Creating data *B* and deleting data *A*
3	Transaction 3	Creating data *A*
4	Transaction 4	Deleting data *B*

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

Q25. There are "Sales", "Customer" and "Product" tables in a relational database. Among lists *A* through *C*, which of the following contains all and only the lists that can be created from the data in these tables? Here, a solid underlined part represents a primary key, and a dotted underlined part represents a foreign key.

Sales

SalesNumber	CustomerNumber	ProductNumber	SalesDate	SalesAmount

Customer

CustomerNumber	CustomerName

Product

ProductNumber	ProductCategoryName	ProductName

A   The list of customers who bought more than a certain amount of money during a certain period in the past

B   The list of products that were out of stock in the previous month

C   The ranking list for sales amount by product in the previous month

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

Q26. 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

Q27. In DBMS, which of the following is a function for maintaining consistency of data by preventing the occurrence of conflicts due to simultaneous access to the data ?

a) Normalization
b) Deadlock
c) Exclusive control
d) Restore

Q28. Which of the following is an appropriate description concerning communications protocols?

a) There are no communications protocols that are used in analog communication.
b) They are developed only by international organizations, and those developed independently by manufacturers are not called communications protocols.
c) In communications protocols, only the procedure of actions in a normal case is defined.
d) Devices that are provided by different manufacturers or have different OS can communicate with each other if they use the same communications protocol.

Q29. When an e-mail is sent to multiple destinations, there are cases that the receiver of the e-mail should not know the e-mail addresses of other destinations. In such cases, which of the following is an appropriate place where the e-mail addresses of the multiple destinations to be sent are entered?

a) Bcc
b) Cc
c) To
d) Both To and Bcc

Q30. Which of the following is required to construct a LAN connecting several computers in a room?

a) Internet
b) Splitter
c) Hub
d) Modem

Q31. Which of the following is the mechanism that determines the correspondence between domain names and IP addresses on the Internet?

a) DNS   b) FTP   c) SMTP   d) Web

Q32. Which of the following is an appropriate explanation concerning URL of a Web page?

a) It is a communications protocol between a Web page and a browser.
b) It is a message about the update history of a Web page.
c) It is a notation for representing the location of a Web page.
d) It is grammar for describing the content (i.e., body) of a Web page.

Q33. Which of the following is the technology that enables terminals connected to a shared network such as the Internet to be used as if they are connected to a leased line by ensuring security with encryption and authentication?

a) ADSL   b) ISDN   c) VPN   d) Wi-Fi

Q34. Which of the following is an explanation of DRM (Digital Rights Management), which is used for digital content?

a) It is data compression technology for audio and video, and there are multiple standards for the technology according to playback quality.
b) It is a collective term for technologies for protecting the copyright of content and restricting its use and duplication.
c) It is an XML-based description language for controlling data broadcasting on digital television.
d) It is a standard for reproducing realistic sound.

Q35. In order to promote risk management, the execution plan for introducing the risk management system was developed as the first step. When the subsequent actions are divided into steps *A* through *C* below, which of the following is the order of the steps in accordance with the PDCA cycle?

　A　Implementing the measures against risks according to the execution plan
　B　Measuring the effect of the implementation and evaluating the effectiveness of the risk management system
　C　Taking corrective actions and improving the risk management system

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

Q36. When information security measures are grouped into three (3) categories of technical security measures, human security measures, and physical security measures, which of the following is an appropriate example of physical security measures?

a)　Making a non-disclosure agreement with employees
b)　Attaching a digital signature to an e-mail when it is sent
c)　Storing a notebook PC in a place that can be locked
d)　Recommending password change on a regular basis

Q37. In the description below concerning a one time password, which of the following is an appropriate combination of terms to be inserted into blanks *A* and *B*?

　A user is authenticated by using a 　　*A*　　 password that is created by a device called a token. This password is called a one time password, and the use of this makes it possible to reduce the risk of 　　*B*　　 caused by password leak.

	A	*B*
a)	fixed	DoS (Denial of Service) attack
b)	fixed	spoofing
c)	disposable	DoS (Denial of Service) attack
d)	disposable	spoofing

Q38. Which of the following is an appropriate description concerning biometric authentication?

a) If margin for error in matching with the authentication data is made larger, the possibility of both rejecting an authorized person and accepting an unauthorized person becomes smaller.

b) It eliminates the need to remember IDs and passwords for authentication, and the need to carry keys or cards.

c) It cannot be used with other authentication methods such as passwords or tokens.

d) The effective period in which retina and finger vein pattern can be used for authentication is short because they change greatly over years.

Q39. Cryptography methods include symmetric cryptography and public key cryptography. Which of the following is an appropriate characteristic of symmetric cryptography?

a) When the encrypted communication takes place with a single person, the number of keys that are used therein is larger than in public key cryptography.

b) It is safe to send a key unencrypted that is to be used for encrypting communication.

c) The processing time required for encryption and decryption is shorter than the time required in public key cryptography.

d) A key pair is generated, and the text that is encrypted with one key can only be decrypted with another key.

Q40. Which of the following is an appropriate explanation of cracking in information security?

a) Conducting a durability test that applies external shock, pressure, drop, and vibration to a device such as a PC

b) Making a malicious and unauthorized intrusion into a computer or spying or destroying data

c) Setting up and maintaining system devices as a system administrator, including setting up a firewall

d) Conducting an audit to ensure that the security measures of the organization work effectively

Q41. In the description below concerning computer viruses, which of the following is an appropriate combination of terms to be inserted into blanks *A* and *B*?

In order to prevent infection with viruses that exploit [*A*] of OS and applications, it is necessary to keep the virus definition file updated and to [*B*].

	A	*B*
a)	threats	apply security patches to OS and applications
b)	threats	encrypt the hard disk
c)	vulnerabilities	apply security patches to OS and applications
d)	vulnerabilities	encrypt the hard disk

Q42. Which of the following is an appropriate explanation of IP spoofing, which is a means of unauthorized access?

a) It refers to getting data such as personal information by pretending to be a financial institution or a famous company, sending an e-mail, and misleading a user into accessing a false site.
b) It refers to a communication route for unauthorized intrusion that is set on the intruded server.
c) It refers to sending a packet with a false source IP address.
d) It refers to collecting data such as operation logs and personal information of a user in such a way that the user does not realize it.

Q43. Among descriptions *A* through *D* concerning how to conduct information security education to employees, which of the following contains all and only the appropriate descriptions?

A The re-education of one who has committed an information security breach includes preventive actions to avoid the same fault being repeated again.

B It is incorporated in a training program for new employees.

C It is restricted to employees in the information systems department.

D It is conducted after an incident or an accident concerning information security as well as on a regular basis.

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

Q44. In a project in which system development is performed on the basis of the waterfall model, defects in the system requirements definition are found in the later processes. Among the processes in which defects are found, which of the following processes involves the least amount of the correction of defects and the rework as a result of the correction?

a) System design   b) Programming

c) Test   d) Software acceptance

Q45. When system development progresses in the sequence of system requirements definition, external design, internal design, and programming, which of the following is the most appropriate phase for defining the layout of screens and the format of forms?

a) External design   b) Internal design

c) Programming   d) System requirements definition

Q46. Among the test techniques to verify the quality of a program, which of the following is a test technique that is used for analyzing the internal structure of the program and then creating the test cases?

a) Black box test   b) Bottom-up test

c) Top-down test   d) White box test

Q47. In system development, which of the following is an activity that is performed after software detailed design?

a) Programming   b) Software architecture design

c) Software outline design   d) Software requirements definition

Q48. Which of the following is a development model for the system development that flexibly adjusts to the changes in user requirements through repetition of improvements and feature additions, as shown in the Figure?

| Analysis | → | Design | → | Programming | → | Testing | → | Evaluation |

(Improvements and feature additions)
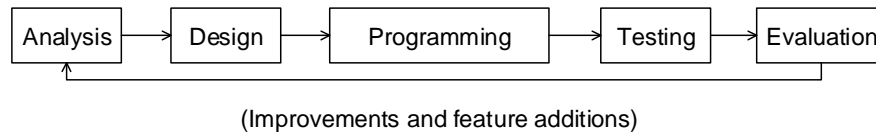
a) Waterfall model
b) Reuse model
c) Spiral model
d) Re-engineering model

Q49. After the start of a project, the scope is defined by collecting the requirements for the project. Which of the following is the most appropriate purpose of defining the scope?

a) To clarify the activities to be implemented in the project
b) To examine the action plan against the risk that has been realized in the project
c) To create an action plan for the delay of the project
d) To create the objectives of the project

Q50. The project management knowledge areas include project cost management, project human resource management, project time management, and project procurement management. In a system development project, which of the following is an appropriate activity of project procurement management when a device is purchased for testing?

a) Creating a schedule so as to start the test using the purchased device after the delivery of the device
b) Providing training in device operations to the person in charge of performing the test by using the purchased device
c) Adding the purchase cost of the device for testing to the project budget, and managing the estimated results and actual results of the total cost
d) Presenting the specifications of the device for testing to several supplier candidates, evaluating the proposals, and deciding on the appropriate supplier accordingly

Q51. Which of the following is an appropriate description concerning the processes in project management?

a) In the monitoring and control process, the start of the project and the investment in resources are approved formally.
b) In the planning process, the activities to be performed in the project are identified and refined into manageable units.
c) In the executing process, the management of estimated results and actual results of the schedule and cost, as well as change management of project activities is performed.
d) In the initiating process, activities included in project planning are implemented.

Q52. Among the descriptions *A* through *C* concerning the measures for risk treatment to be considered when a new product is developed, which of the following is the list that contains all and only appropriate measures for reducing quality-related risks?

A: Developing the product by using stable technology
B: Purchasing insurance against development delays
C: Creating a prototype of the product

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

Q53. Which of the following is an appropriate management system that improves the efficiency of IT operations and the quality of services including availability?

a) IT technical strategy management
b) IT service management
c) IT project scope management
d) IT project time management

Q54. In release management of IT service management, the items which have been planned and approved according to the change management are implemented in the production environment. Which of the following is an appropriate description concerning release management?

a) Information may be provided after the completion of release to users and operation managers concerned with changes.
b) During release planning, cases when activities cannot be completed within the planned time period are also taken into account.
c) Since there is no possibility of new failures after release, it is not necessary to make preparations.
d) Regardless of the scale of release, the release is implemented simultaneously for all users.

Q55. The purposes of facility management of an office using IT include ensuring cost reduction, comfort, security, and confidentiality. Which of the following is the most appropriate policy with regard to ensuring security?

a) Placing anti-earthquake measures and ensuring evacuation routes
b) Adopting IT devices with low power consumption
c) Improving environment, such as desks and chairs, sounds and lights, etc.
d) Implementing security measures such as entrance and exit control

Q56. In a certain IT service, four (4) priority levels are set for system changes: urgent, high, medium, and low. Among the proposed changes, which of the following is the change that should be classified as "urgent"? Here, changes are released regularly at the end of each month.

Priority	Description
Urgent	Fixing problems that pose a risk to human life or greatly reduce the ability to provide important public services, and that call for immediate response
High	Fixing problems that have a severe impact on several important users, or have an impact on many users, and that call for prompt response
Medium	Fixing problems that do not have a severe impact, but cannot be postponed until the next regular release
Low	Items for which change is required, but for which waiting until the next regular release is possible

a) System changes related to improving the function of supplementary lookup screens necessary for the launch of new services in two (2) weeks
b) System changes related to countermeasures to address failures in an electronic conference system that has many corporate users
c) System changes related to measures to address faults in a disaster information system that is used for making decisions on issuing local evacuation advisories
d) Repair of program bugs that can be completed by the processing date in the coming month

Q57. Which of the following is a description concerning facility management for the maintenance of information system equipment?

a) It manages schedules, budgets, personal resources, etc. for the success of information system development projects.
b) It manages fault monitoring, creation of backups, etc for information systems.
c) It manages data centers and other buildings where information systems are operated.
d) It manages user IDs and passwords for the use of information systems.

Q58. As a part of internal control, access management conforming to the segregation of duties is implemented. During the development of the information system, which of the following is an appropriate process in which the design of access management is started?

a) Requirements definition   b) Programming

c) Test   d) After operation start

Q59. During a systems audit, systems auditors who are independent of the audit target inspect and evaluate the information systems comprehensively from an objective viewpoint. As a result of the systems audit requested by the management of a company, some problems are found in the effectiveness of the current information systems. Who are the most appropriate persons to whom the systems auditor gives advice and makes recommendations?

a) Stockholders   b) Jurisdictional authority

c) Management   d) System users

Q60. Which of the following is an act that is <u>inappropriate</u> in light of the code of professional ethics of a systems auditor?

a) Checking the findings of a business operations audit by an auditor

b) Audit based on a contingent fee contract

c) Joint audit with another auditor having specialized knowledge

d) Checking the contents of an audit report of another auditor who performed the audit the previous year

Q61. In order to manufacture one (1) unit of a product, 10 kg of the raw material *A* and 5 kg of the raw material *B* are needed. If the amount of raw material that can be used in one (1) month is 60 kg of raw material *A* and 40 kg of raw material *B*, what is the maximum number of units of the product that can be manufactured in one (1) month?

a) 4   b) 6   c) 8   d) 10

Q62. Which of the following concepts forms the basis of corporate activities according to which, rather than simply pursuing profit, social issues such as contribution to society and protection of the global environment are perceived and tackled.

a) BCP   b) CSR   c) M&A   d) MBO

Q63. Which of the following is an appropriate combination of the standards and their applicable fields?

	IEEE 802.3	ISO 9001	ISO 14001
a)	Environmental management	LAN	Quality management
b)	Environmental management	Quality management	LAN
c)	LAN	Environmental management	Quality management
d)	LAN	Quality management	Environmental management

Q64. Which of the following codes is used as an international standard for identifying a book?

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

**Q65.** Which of the following can be classified as a trade secret from a viewpoint of preventing unfair competition?

a) Information about a personal scandal involving a company executive
b) Information about technology under development, which is marked as "Strictly Confidential" and circulated throughout the company
c) Information about a production method that is not publicly known, which is marked as "Confidential" and stored in a locked cabinet
d) A commercially available book which describes how to sell a company's products effectively

Q66. In e-commerce using public key cryptography, which of the following is created by a CA (Certification Authority) that is a third-party organization independent from the parties involved in the transaction?

a) Digital signatures of the parties involved in the transaction
b) Electronic certificates for private keys of the parties involved in the transaction
c) Electronic certificates for public keys of the parties involved in the transaction
d) Passwords for the parties involved in the transaction

Q67. 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.
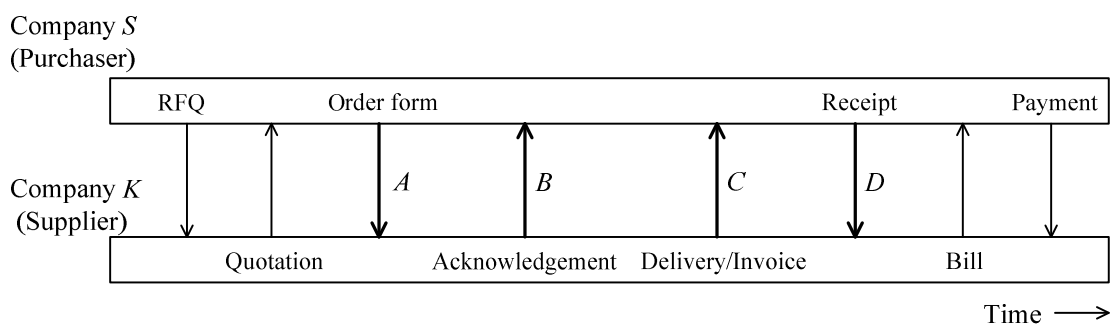
a) *A*   b) *B*   c) *C*   d) *D*

Q68. Which of the following corresponds to a third-party audit that is defined in "ISO 9000:2015 Quality management system—Fundamentals and vocabulary"?

a) A parent company audits the quality management system of a subsidiary company.
b) A customer audits the quality management system of a trading partner company.
c) A company audits its own quality management system for internal purposes.
d) A certification body audits the quality management system of a client company.

Q69. Which of the following is an appropriate explanation of blue ocean strategy?

a) Generating a new market that has no competition by providing new value
b) Trying to increase sales opportunities by handling a wide range of products other than best-selling products
c) Thoroughly proceeding with differentiation from products provided by the top companies in the industry
d) Building predominance over competitors through cost reduction

Q70. As segmentation in marketing, consumers are classified on the basis of the attitude toward product purchase. Which of the following is an appropriate attitude toward product purchase of a consumer called an opinion leader?

a) Conveying one's evaluation of a product to friends and acquaintances after the product becomes popular
b) Taking into consideration their friends' evaluation and public opinion when deciding whether to purchase a product
c) Waiting for the sales of a new product to start, and being eager to acquire it before friends and acquaintances
d) Purchasing a new product in its initial phase of sale, and conveying information about the product to friends and acquaintances

Q71. Which of the following is a means by which, analysis and evaluation of the management of a company is performed not only from the perspective of the financial performance, but also from the perspectives of customers, business processes, and learning and growth, and is then linked to the formulation of a strategy?

a) BSC b) CSF c) PPM d) SWOT analysis

Q72. Which of the following is the marketing technique that is composed of four components: product, price, place, and promotion?

a) Social marketing b) Direct marketing
c) Marketing channel d) Marketing mix

Q73. Which of the following is an appropriate purpose of MOT (Management Of Technology)?

a) To improve the productivity by using mathematics and natural science in business administration and production management
b) To grow a company by effectively connecting technical innovation with the business of one's company
c) To improve the quality of a company by ensuring that the employees put in efforts systematically to improve the quality of products
d) To improve the business process efficiency by acquiring the necessary techniques and knowledge from senior employees through actual business operations at the workplace

Q74. Which of the following systems can be realized through the use of RFID?

a) Performing medical activities by transmitting images and voice data of patients from a remote site via a network
b) Depositing and withdrawing money from a bank ATM by using a cash card
c) Reading product information from barcodes on products, and performing sales information management and order processing at the time of sale in stores
d) Setting an electronic tag on a delivery parcel, and checking information related to the shipping history of the parcel

Q75. 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 monitoring shipment
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

Q76. Which of the following is a technique for achieving effective business operations by managing and optimizing a company's management resources in an integrated manner?

a) BPR   b) ERP   c) RFP   d) SLA

Q77. Which of the following is the most appropriate explanation of BTO that is used for the production of PCs?

a) Each product is assembled by only one worker.
b) The products are manufactured with the minimum possible inventory between the production processes by procuring the required amount of raw materials and components at the required time.
c) The products are stocked as components rather than finished products, and assembled after receiving an order from the customer, according to the details of the order.
d) The products showing a company's own logo are assembled by another company.

Q78. Which of the following is classified as a "B to E" transaction?

   a) A company provides services, such as welfare and education for the company's own employees, through the Internet.
   b) A travel company uses the Internet to give campaign information and sell tickets to consumers by subscription.
   c) An automobile manufacturer uses the Internet to procure components and materials from vendors across the world.
   d) In an auction held on the Internet, a participant buys a product from another participant.

Q79. A single unit of Product A is composed of three (3) pieces of Part B and two (2) pieces of Part C.　In the production plan for a particular period, when the demand for Product A is 10, which of the following is the net requirement of Part B?　Here, the quantity in stock is five (5) for Part B, and there are no other pieces in stock, in process, on back order, or already allocated.　The net requirement is calculated by subtracting the stock available for allocation from the gross requirement.

   a) 20　　　　　　　b) 25　　　　　　　c) 30　　　　　　　d) 45

Q80. Among e-commerce categories, which of the following corresponds to the concept of "B to C" transactions?

   a) CALS　　　　　　　　　　b) Web-EDI
   c) Virtual companies　　　　　　d) Virtual malls

Q81. Which of the following is the most appropriate characteristic of BPM (Business Process Management)?

a) In order to resolve a business issue, the introduction of a mechanism of management according to international standards is required.
b) The workflow is analyzed and arranged for each process, and problems are identified for continuous improvement of the workflow.
c) The efficiency of business processes is promoted by outsourcing some of them to external vendors.
d) Business processes are fundamentally reviewed and redesigned.

Q82. A company is aiming to analyze the data that is accumulated in information systems and use such data in business operations.   However, progress is not made because of the insufficient experience of employees.   Which of the following is the most appropriate activity that should be performed with higher priority in order to achieve the objective?

a) Improving the performance of software used for analysis
b) Installing a high-performance PC for analysis in each department
c) Providing typical cases of analysis and templates for analysis
d) Speeding up the provision of data that can be used for analysis

Q83. In order to make good use of IT to implement the business strategy of a company, which of the following is the most appropriate point to be considered when an information strategy is created?

a) The creation of the business strategy is the responsibility of top management, and on the other hand, the creation of the information strategy is the responsibility of the information systems department, and these activities should proceed independently.

b) When the computerization is planned, IT-based automation of business processes should be implemented after identifying the business functions and workflow of the current business operations.

c) When the computerization of business operations is planned, the ideal information system should be defined and reviewed whether its purpose and functions conform to the business strategy.

d) In the planning stage of the information strategy, the initial cost should be evaluated as the cost of the system, and the cost of system operations and maintenance should be evaluated at the start of operations.

Q84. Which of the following is a set of activities that clarifies the target business operations, cost, schedule, organizational structure, investment effect, and other factors of system development, based on the information strategy?

a) Operational activities
b) Development activities
c) Planning activities
d) Maintenance activities

Q85. The table below shows the evaluated value of the proposals of four (4) vendors from the viewpoints of management, technology, and price. When each value of the management viewpoint, technology viewpoint, and price viewpoint is weighted, and the vendor with the highest total score is selected as the supplier, which of the following vendors is selected?

Evaluation item	Weight	Vendor A	Vendor B	Vendor C	Vendor D
Management viewpoint	2	2	4	3	3
Technology viewpoint	3	3	4	2	3
Price viewpoint	5	4	2	4	3

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

Q86. Which of the following is an appropriate approver for the optimization plan of the overall information system of a company?

a) Chief Information Officer
b) Head of the business operations department handling the mission-critical system
c) Head of the department where RFP is created
d) System development project manager

Q87. Which of the following is an appropriate explanation of an ASP?

a) A business operator or a form of service that provides communication lines for connecting to the Internet
b) A service on the Internet for creating a closed community that is accessible to users who are members of the community
c) A business operator or a form of service that provides users with application software on a server via the Internet
d) An approach of constructing an information system from the viewpoint of a service, rather than from the viewpoint of a product such as hardware and software

Q88. Which of the following is an activity that is performed in the requirements definition process of system development?

a) Creating and approving computerization plan
b) Performing qualitative and quantitative risk analysis
c) Estimating investment effect and computerization costs
d) Identifying the needs and demands of system users

Question A   Read the following description concerning questionnaire statistics and analysis, and then answer the four questions.

In order to evaluate customer satisfaction and make proposals to improve it, eyeglasses retail company *T* asked customers to fill in a questionnaire at Company *T*'s stores. The details of the questionnaire are as shown in Table 1, and responses are provided with the five (5) levels of 5. Satisfied, 4. Somewhat satisfied, 3. Neutral, 2. Somewhat dissatisfied, and 1. Dissatisfied.

Table 1   The details of the questionnaire

Question number	Category	Details
1	Store	Cleanliness and other aspects of a store and facilities
2	Customer service	Staff attitudes and customer service
3	Guidance and literature	The guidance and literature in a store
4	Technical capabilities and finish of products	Technical capabilities and finish of products
5	Price	The appropriateness of the price
6	Overall evaluation	Overall satisfaction

In order to aggregate and analyze the questionnaires that are filled in by 200 respondents, spreadsheet software is used to create the worksheet in Figure 1. Here, the response table is a list where each line is the evaluation of a customer, and cells B204 through F204 calculate and display correlation coefficients that show the relationship between the evaluation for the category in each column and the overall evaluation. The evaluation aggregation table displays the occurrence for each level of satisfaction (1 through 5) in each category.

	A	B	C	D	E	F	G
1	Questionnaire aggregation table						
2	Sequential number	Store	Customer service	Guidance and literature	Technical capabilities and finish of products	Price	Overall evaluation
3	1	3	4	3	4	3	4
4	2	3	5	2	3	4	4
5	3	2	5	3	4	4	4
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
201	199	3	4	3	5	3	4
202	200	2	3	2	3	3	3
203	Evaluation average	2.8	3.7	2.6	3.4	3.1	3.5
204	Correlation coefficient	0.60	0.72	0.17	0.31	0.40	
205							
206	Evaluation aggregation table						
207	Evaluation	Store	Customer service	Guidance and literature	Technical capabilities and finish of products	Price	Overall evaluation
208	5	7	47	6	42	3	12
209	4	31	70	15	46	61	97
210	3	85	67	92	72	104	81
211	2	71	13	75	39	26	8
212	1	6	3	12	1	6	2
213	Total	200	200	200	200	200	200

Figure 1　Worksheet of the response table and evaluation aggregation table

Q89. In cell B208 of the evaluation aggregation table in Figure 1, an expression that displays the relevant occurrence is entered. Which of the following is the expression that is entered in cell B208? Here, the expression in cell B208 is copied into cells B208 through G212.

    a)   COUNTIF($B3:$B202, = A$208)
    b)   COUNTIF($B3:$G3, = $A3)
    c)   COUNTIF(B$3:B$202, = $A208)
    d)   COUNTIF(B$3:G$3, = A$3)

Q90. In order to analyze what type of trends exist on the basis of the evaluation of customers who gave a low evaluation for a specific category, a selected response table that selects only the responses with an evaluation of 2 or lower for a specified category is added to the worksheet in Figure 1, and the worksheet in Figure 2 is created.

When the question number of a category is entered into cell K204, the responses in which the evaluation of this category is 2 or lower are selected from the response table, and copied into the same rows in the selected response table. A null value is stored in the cells of rows that do not match the criteria for inclusion in the selected response table. An expression is entered in cell J3 that returns the evaluation in cell B3 of the response table if, among the evaluations in cells B3 through G3, the evaluation that matches the category for the question number entered in cell K204 has a score of 2 or lower, and otherwise returns a null value. Which of the following is the expression that is entered in cell J3? Here, the expression in cell J3 is copied to cells J3 through O202.

	A	B	...	G	H	I	J	K	L	M	N	O
1	Questionnaire aggregation table					Selected questionnaire table						
2	Response number	Store	···	Overall evaluation		Response number	Store	Customer service	Guidance and literature	Technical capabilities and finish of products	Price	Overall evaluation
3	1	3	···	4		1						
4	2	3	···	4		2	3	5	2	3	4	4
5	3	2	···	4		3						
⋮	⋮	⋮	⋮	⋮		⋮	⋮	⋮	⋮	⋮	⋮	⋮
201	199	3	···	4		199						
202	200	2	···	3		200	2	3	2	3	3	3
203	Evaluation average	2.8	···	3.5								
204	Correlation coefficient	0.60	···									
205												
206	Evaluation aggregation table											

Selection of questionnaires with an evaluation of 2 or lower for question number [3]

	Evaluation	Store	···	Overall evaluation
207	Evaluation	Store	···	Overall evaluation
208	5	7	···	12
209	4	31	···	97
210	3	85	···	81
211	2	71	···	8
212	1	6	···	2
213	Total	200	···	200

Figure 2　Worksheet with the selected response table added

a)　IF (TLOOKUP($B3:$G3, K204, 1) > 2, B3, null)

b)　IF (TLOOKUP($B3:$G3, K204, 1) > 2, null, B3)

c)　IF (TLOOKUP($B3:$G3, 1, K204) ≤ 2, B3, null)

d)　IF (TLOOKUP($B3:$G3, 1, K204) ≤ 2, null, B3)

[Technology]

Q91. The categories of Store and Guidance and literature have a low average evaluation in the response table in Figure 1, so an additional questionnaire is to be conducted for customers who responded with Quite dissatisfied or Dissatisfied for either or both of these categories. Responses with an evaluation of 2 or lower for Store are selected, and then the number of responses that also have a score of 2 or lower for Guidance and literature are counted. The result is that 38 people responded with an evaluation of 2 or lower for both categories. How many respondents are in the scope of the additional questionnaire?

a) 49　　　　　　　b) 126　　　　　　c) 162　　　　　　d) 164

[Strategy]

Q92. When a relationship exists whereby one variable increases as the other increases, a correlation coefficient shows a positive value of 1 or lower, and the closer it is to 1 the stronger the relationship. Thus, categories that have a larger correlation coefficient in the response table in Figure 1 have a greater impact on the overall evaluation. Furthermore, the average evaluation in the response table can be used to judge the current level of customer satisfaction for each category. Therefore, by making a judgment on the basis of the correlation coefficient and the average evaluation, the graph in Figure 3 is created with the aim of researching which categories to improve in order to increase the overall level of customer satisfaction.

The graph in Figure 3 shows the coordinates of the categories 1 through 5 of the questionnaire aggregation table with the correlation coefficient for the horizontal axis and the average evaluation for the vertical axis. The graph is divided into four (4) areas by a line that uses 0.5 as the reference value for the correlation coefficient and a line that uses 3.0 as the reference value for the average evaluation, and the priority for improvement is to be judged on the basis of the area in which categories 1 through 5 are located. Which of the following is the appropriate analysis of the details of Figure 3?
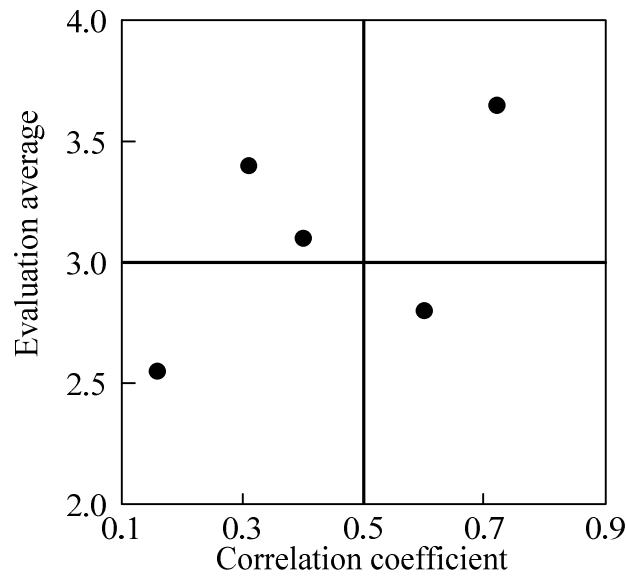
Figure 3　Graph of average evaluation and correlation coefficient from responses

a) The category of Guidance and literature has a low average evaluation and is in an area with a weak relationship to the overall evaluation, so it should be prioritized for improvement.

b) The category of Technical capabilities and finished products has a high average evaluation and is in an area with a strong relationship to the overall evaluation, so it does not need to be prioritized for improvement.

c) The category of Customer service has a high average evaluation and is in an area with a weak relationship to the overall evaluation, so no changes need to be made.

d) The category of Store has a low average evaluation and is in an area with a strong relationship to the overall evaluation, so it should be prioritized for improvement.

Read the following description concerning schedule management for a project, and then answer the four questions.

Mr. *P* becomes a member of the team assembling a machine, and with the guidance of the team leader, creates an arrow diagram in order to confirm the processes. In order to work efficiently, Mr. *P* decides to share the arrow diagram with the team members. Figure 1 shows the arrow diagram.

Each process is planned to be performed by one (1) person and is completed in the planned number of days no matter which team member performs the process.
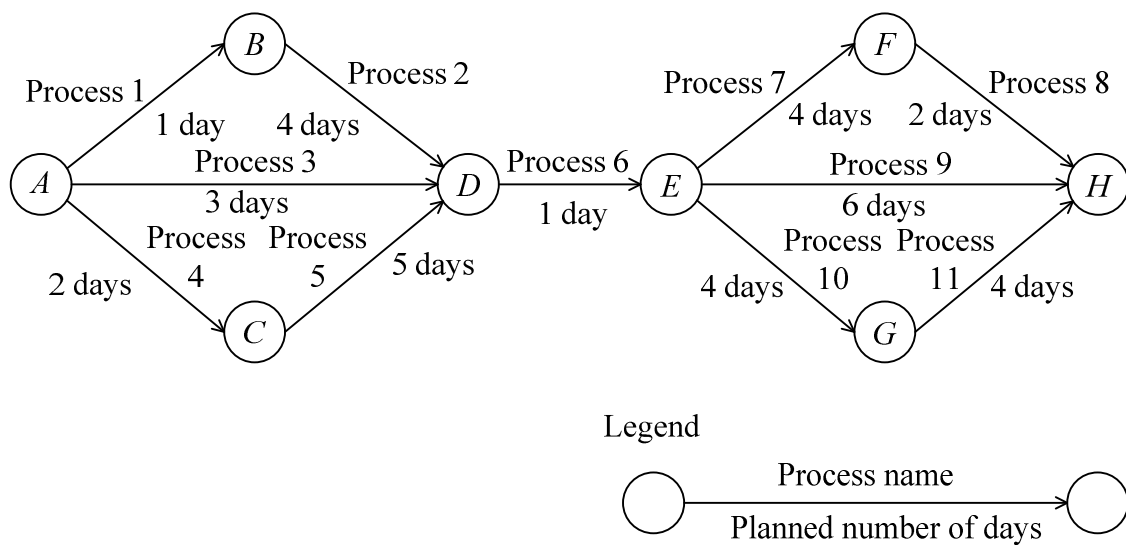
Figure 1   Arrow diagram

Q93. Which of the following is an appropriate description to be inserted into blank *A* in the procedure for the creation of an arrow diagram?

[Procedure]
The order of processes is determined ┌─── *A* ───┐ , and an arrow diagram is created.

a) on the basis of the cost of each process
b) on the basis of the sequence of processes
c) on the basis of the risk of each process
d) on the basis of the team member in charge

[Management]
Q94. If each process in Figure 1 is completed in the planned number of days, in how many days will this assembly be completed?

a) 10 b) 12 c) 14 d) 16

[Management]
Q95. Mr. *P* is placed in charge of Process 1 and Process 2 in Figure 1. After Process 1 is completed in the planned number of days, he decides to take some days off before the start of Process 2. With the assumption that that Process 2 will be completed in the planned number of days, what is the maximum number of days that Mr. *P* can take off before the start of Process 2 without any impact on the progress of the project? Here, company holidays are ignored.

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

Q96. As of *E* in Figure 1, it becomes necessary to move deadline for assembly activities to an earlier date. Mr. *Q*, who is in charge of another work, is to be assigned to some of the processes of this project for two (2) days. In order to complete the project earlier, which process should Mr. *Q* be assigned to and for how many days?

a) Process 7 for two (2) days
b) Process 10 for two (2) days
c) Process 7 and Process 8 for one (1) day each
d) Process 7 and Process 9 for one (1) day each

Read the following description concerning manufacture of a product and planning of sales, and then answer the four questions.

Company *G*, which manufactures electrical products, plans to sell its new Product *H*. The company is now considering the manufacturing method and sales plan.

It is considering Plan *A* and Plan *B* as manufacturing methods for Product *H*, and estimates the fixed cost and variable cost for each plan as shown in Table 1.

Table 1 Estimated fixed cost and variable cost for Plan *A* and Plan *B*

	Fixed cost (10,000 yen/month)	Variable cost (10,000 yen/unit)
Plan *A*	1,400	6
Plan *B*	2,000	5

As shown in Figure 1, the relationship between the number of units of Product *H* manufactured per month and the combined manufacturing cost (i.e., fixed cost plus variable cost) can be represented as a graph.
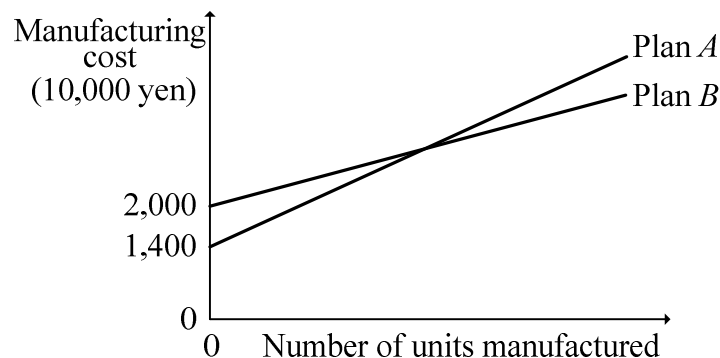
Figure 1　Relationship between number of units manufactured and manufacturing cost
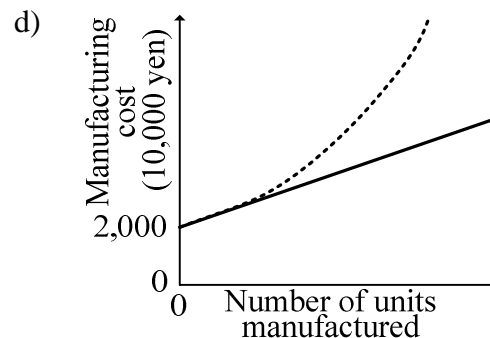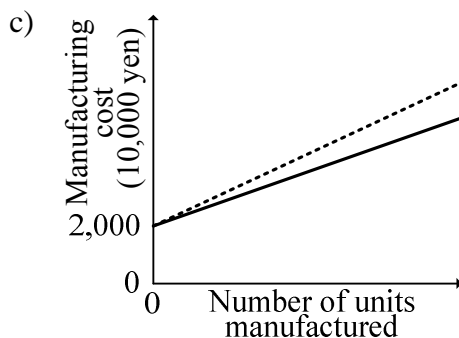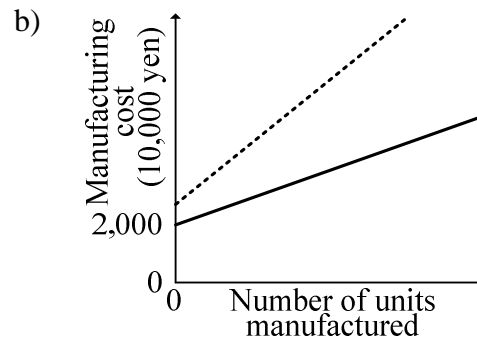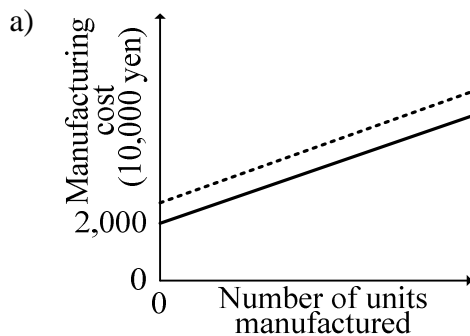
[Strategy]

Q97. Which plan (Plan *A* or Plan *B*) results in the higher manufacturing cost for Product *H* depends on the number of units manufactured.　In the case where the manufacturing cost under Plan *B* become less than or equal to the manufacturing cost under Plan *A*, at least how many units of product *H* are manufactured per month?

　a)　120　　　　　　b)　300　　　　　　c)　400　　　　　　d)　600

[Strategy]

Q98. Component *J*, which is procured from outside the company, is used in Product *H*. There is a possibility that the procurement price of Component *J* may increase from the next month.   When the price of Component *J* rises and Plan *B* is adopted as the manufacturing method, which of the following is the appropriate graph that shows the relationship between the number of units manufactured and manufacturing cost? Here the relationship between the original number of units manufactured and the original manufacturing cost is shown as a solid line, and the relationship after the procurement price increase of Component *J* is shown as a dotted line.

a)

b)

c)

d)

[Strategy]

Q99. Company *G* conducted a sales planning simulation concerning the manufacture of Product *H* under Plan *A*.　When the company manufactures 400 units per month under the manufacturing method of Plan *A*, what is the minimum sales price necessary to secure a monthly gross profit of 20 million yen?　Here, all products manufactured during a month can be sold during the same month.

a)　135,000　　　　b)　145,000　　　　c)　150,000　　　　d)　160,000

[Strategy]

Q100. Company *G* conducted a sales planning simulation concerning the manufacture of Product *H* under Plan *B*.　What is the gross profit (%) when the company manufactures the minimum number of units required to fulfill the [Monthly profit plan] under Plan *B*?　Here, all products manufactured during a month can be sold during the same month.

[Monthly profit plan]
(1) The sales price of Product *H* is 100,000 yen per unit.
(2) The monthly gross profit is 20 million yen.

a)　20　　　　b)　25　　　　c)　33　　　　d)　50