



October 2017

Fundamental IT Engineer Examination (Morning)

Questions must be answered in accordance with the following:

Question Nos.	Q1 – Q80
Question Selection	All questions are compulsory.
Examination Time	9:30 – 12:00 (150 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 autumn Fundamental IT Engineer Examination conducted?

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

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

[Sample Answer]

Q1	<input type="radio"/> a	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> d
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**Do not open the exam booklet until instructed to do so.
Inquiries about the exam questions will not be answered.**










Symbols commonly used in questions

Unless otherwise noted in each question, the following notational conventions are applied as shown in the tables.

I. Standards

Notation in the exam questions	Name of the standard
ISO 9001	ISO 9001:2008
ISO 14001	ISO 14001:2004
ISO/IEC 20000-1	ISO/IEC 20000-1:2011
ISO/IEC 20000-2	ISO/IEC 20000-2:2012
ISO/IEC 25010	ISO/IEC25010:2011
ISO/IEC 27001	ISO/IEC 27001:2005
ISO/IEC 27002	ISO/IEC 27002:2013
ISO/IEC 12207	ISO/IEC 12207:2008
ISO 21500	ISO 21500:2012
ITIL	ITIL 2011 edition
PMBOK	PMBOK Guide – Fifth Edition

II. Logic Circuit

Graphic symbol	Explanation
	AND gate
	NAND gate
	OR gate
	NOR gate
	Exclusive OR (XOR) gate
	Exclusive NOR gate
	Buffer
	NOT gate
	Three-state buffer (or tri-state buffer)

Note: A small circle or “bubble” on either the input or the output terminal shows inversion or negation of the logic state.

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Q1. What is the octal representation of a hexadecimal fraction F1B0.C?

- | | |
|-------------|--------------|
| a) 170660.6 | b) 361540.14 |
| c) 743300.6 | d) 5213052.3 |

Q2. When two unbiased coins are tossed and an unbiased six-sided die is rolled at the same time, what is the probability that at least one coin shows heads and the die shows an even number?

- | | | | |
|----------|----------|----------|----------|
| a) $1/4$ | b) $3/8$ | c) $1/2$ | d) $3/4$ |
|----------|----------|----------|----------|

Q3. Which of the following expressions in postfix notation is equivalent to an expression $2+5\times 3+4$ in infix notation? Here, the operator ' \times ' has higher precedence than '+'.

- | | |
|-------------------------|-------------------------|
| a) 2 5 3 4 \times + + | b) 2 5 + 3 4 \times + |
| c) 2 5 3 \times 4 + + | d) 2 5 3 \times + 4 + |

Q4. Analog audio data is being sampled and converted to 8-bit digital audio data using the PCM method, then transmitted in 64,000 bits per second. What is the sampling interval in microseconds?

- | | | | |
|---------|---------|--------|--------|
| a) 15.6 | b) 46.8 | c) 125 | d) 128 |
|---------|---------|--------|--------|

- Q5.** Flowchart in Figure 1 describes a procedure to convert a matrix A to another matrix B . When this flowchart converts matrix A in Figure 2 to matrix B in Figure 3, which of the following should be filled in the blank C ? Here, $A(i, j)$ and $B(i, j)$ represent the (i, j) -th elements of matrices A and B . In Figure 1, the loop limits “ $k: n, m$ ” indicates the variable k to vary integers from n to m .

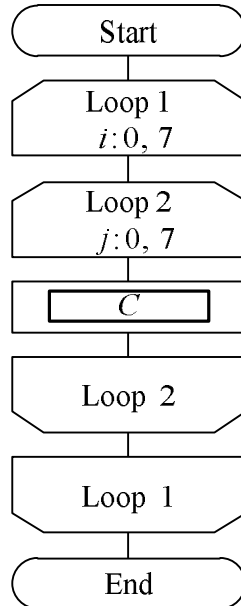


Figure 1 Flowchart

	j							
	0	1	2	3	4	5	6	7
i ↓ 0		*	*	*	*	*	*	*
1		*						
2		*						
3		*	*	*	*			
4		*						
5		*						
6		*						
7		*						

Figure 2

|| Contents of matrix A

	j							
	0	1	2	3	4	5	6	7
i ↓ 0								
1	*	*	*	*	*	*	*	*
2					*			*
3					*			*
4					*			*
5								*
6								*
7								

Figure 3

Contents of matrix B

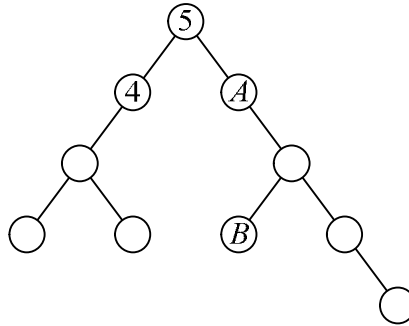
- a) $A(i, j) \rightarrow B(7-i, 7-j)$ b) $A(i, j) \rightarrow B(7-j, i)$
 c) $A(i, j) \rightarrow B(i, 7-j)$ d) $A(i, j) \rightarrow B(j, 7-j)$

- Q6.** When Bubble sort algorithm is used, how many exchange operations are required to sort the following numbers in ascending order?

9, 2, 13, 21, 3, 0

- a) 7 b) 8 c) 9 d) 10

Q7. Values from 1 to 10 are assigned to 10 nodes in the binary tree below so that each node has a different value. In this assignment, the value of each node is greater than the values of the left child and all its descendants, and is less than the values of the right child and all its descendants. Which of the following is a combination of values assigned to node *A* and node *B*?



- a) $A = 6, B = 7$ b) $A = 6, B = 8$
c) $A = 7, B = 8$ d) $A = 7, B = 9$

Q8. There are two boxes; the first box contains two green balls and three red balls; the second box contains three green balls and two red balls. A boy randomly selects a box from the two, and then randomly picks a ball from that box. If the ball is red, what is the probability that he selected the first box?

- a) $\frac{3}{20}$ b) $\frac{3}{10}$ c) $\frac{1}{2}$ d) $\frac{3}{5}$

Q9. Which of the following is an appropriate explanation of symmetric multiprocessing (SMP)?

- One CPU core serves as a master, while the other CPU cores act as slaves and perform the tasks assigned to them by the master.
- One or more programs are loaded in the main memory, and only one program at a time is able to get the CPU for the execution while all the others are waiting their turns.
- Several CPU cores have schedules for their own tasks, with priorities set by the operating system with equal access to the memory and system resources.
- While one stage of an instruction is being processed, other instructions may be processed at a different stage so that multiple instructions can be processed at the same time.

Q10. To determine an effective address from the value recorded in the address part of instruction, various addressing modes are used. Which of the following modes uses the value of the address part as an effective address?

- a) Absolute addressing
- b) Base plus index addressing
- c) Indexed addressing
- d) PC relative addressing

Q11. Which of the following is a memory device that stores programs or data in factories, and only has the read operation for the stored programs or data?

- a) DRAM
- b) Flash memory
- c) Mask ROM
- d) SRAM

Q12. Which of the following is an appropriate role of a device driver?

- a) It decides the next task to be executed from tasks queued up for execution.
- b) It directly controls the hardware according to requests from an application program.
- c) It interprets the command strings that are entered by the user, and starts the applicable program.
- d) It manages the display status on the screen in multiple windows.

Q13. Which of the following is the RAID level that can recover data from the other disks, with a minimum of two-disk configuration?

- a) RAID 0
- b) RAID 1
- c) RAID 5
- d) RAID 6

Q14. There exists a system composed of two processing devices. What is the difference in availability between the system that works when either of the devices functions normally and the one when both devices function normally? Here, the availability for both devices is 0.9, and factors other than the processing devices can be ignored.

- a) 0.09
- b) 0.10
- c) 0.18
- d) 0.19

Q15. Which of the following is an appropriate characteristic of a web system implemented in a three-layer client/server system configuration?

- a) A business process is executed on the server side, and the client software displays the result on a screen according to the HTML coding.
- b) A program coded in HTML is run on the server side, and the client software displays the result on a screen.
- c) Every time a business process is changed, a business process application for operating the web system must be sent and installed on the client terminal.
- d) On the client terminal, it is necessary to have a resident service program waiting to receive an HTTP request from the server side.

Q16. Below is the list of processes, P1, P2, P3, and P4, and their burst time for CPU scheduling algorithms.

<u>Process</u>	<u>Burst time (millisecond)</u>
P1	9
P2	5
P3	7
P4	4

Which of the following combinations is the average waiting time in millisecond for a First-Come, First-Serve (FCFS) scheduling and Shortest-Job-First (SJF) scheduling given that the process arrives in the order P1, P2, P3, and P4, and the latency can be ignored. Note that the burst time is the actual time required to complete a process.

	Average process waiting time under FCFS	Average process waiting time under SJF
a)	9.5	6.25
b)	9.0	7.0
c)	11.0	7.25
d)	11.5	8.0

Q17. In input/output management, which of the following is an appropriate function of a buffer?

- a) Enabling an input/output device to be handled in the same way as a file
- b) Enabling the use of an input/output device without the need to consider its unique specifications by creating a data exchange layer between an input/output device and a processing device
- c) Notifying a processing device when an input/output device becomes available for use
- d) Reducing the difference in processing speed by establishing a special area of memory between an input/output device and a processing device

Q18. Which of the following is the backup method that requires the longest time to backup but the shortest time to restore?

- a) Differential backup
- b) Full backup
- c) Incremental backup
- d) Synthetic full backup

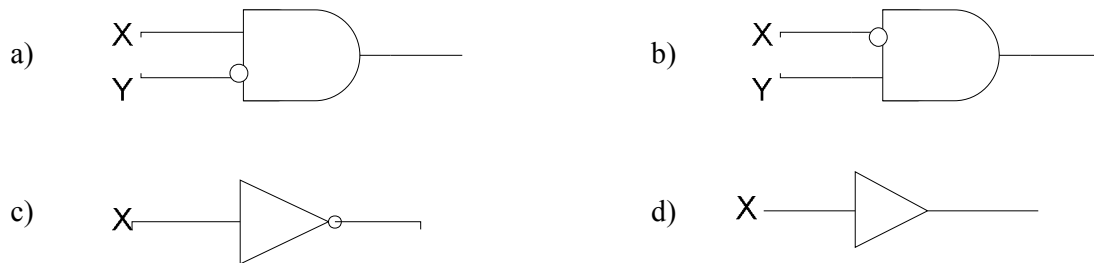
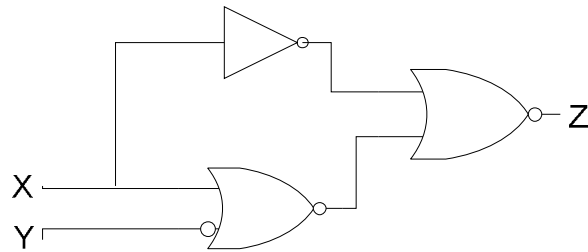
Q19. In UNIX, which of the following is a function that links the standard output of a command directly to the standard input of another command?

- a) Background job
- b) Brace expansion
- c) Pipe
- d) Redirect

Q20. Which of the following is an appropriate explanation of optimization in a compiler?

- a) Analyzing the source code and generating an object code with an improved run-time processing efficiency
- b) Generating an intermediate code for an interpreter rather than generating an object code
- c) Generating an object code that displays the called subprogram name or the content of a variable at a particular point in time during the execution of the program
- d) Generating an object code that operates in a computer with a different architecture from the computer in which the compiler is implemented

Q21. Which of the following is equivalent to the logic circuit below?



Q22. Which of the following is a logic gate combination that provides an output 1 when both inputs are 0?

- | | |
|----------------|----------------|
| a) AND or XOR | b) NAND or XOR |
| c) NOR or XNOR | d) OR or XNOR |

Q23. Which of the following uses a flip-flop circuit in a memory cell?

- | | | | |
|---------|-----------|----------|---------|
| a) DRAM | b) EEPROM | c) SDRAM | d) SRAM |
|---------|-----------|----------|---------|

Q24. Which of the following is used to control the visual styles of HTML documents, such as text sizes, text colors, or page layout?

- | | | | |
|--------|--------|--------|---------|
| a) CMS | b) CSS | c) RSS | d) Wiki |
|--------|--------|--------|---------|

Q25. In a DBMS, which of the following functions decides the schema?

- a) Definition function
- b) Maintenance function
- c) Recovery function
- d) Security function

Q26. The attributes of the relation “OrderRecord” have the functional dependency (1) to (6) below. Normalization is performed with these functional dependencies up to the third normal form, and the decomposition into the relations “Product,” “Customer,” “Order,” and “OrderDetails” are performed. Which of the following is appropriate for the relation “OrderDetails”? Here, $\{X, Y\}$ represents a combination of the attributes X and Y , and $X \rightarrow Y$ represents that X functionally determines Y . The solid underline represents a primary key.

OrderRecord (OrderNumber, OrderDate, CustomerNumber, CustomerName,
ProductNumber, ProductName, Quantity, UnitSalesPrice)

[Functional dependency]

- (1) OrderNumber, \rightarrow OrderDate
- (2) OrderNumber, \rightarrow CustomerNumber
- (3) CustomerNumber \rightarrow CustomerName
- (4) $\{\text{OrderNumber, ProductNumber}\} \rightarrow \text{Quantity}$
- (5) $\{\text{OrderNumber, ProductNumber}\} \rightarrow \text{UnitSalesPrice}$
- (6) ProductNumber \rightarrow ProductName

- a) OrderDetails (OrderNumber, Quantity, UnitSalesPrice)
- b) OrderDetails (OrderNumber, CustomerNumber, Quantity, UnitSalesPrice)
- c) OrderDetails (OrderNumber, CustomerNumber, ProductNumber, CustomerName, Quantity, UnitSalesPrice)
- d) OrderDetails (OrderNumber, ProductNumber, Quantity, UnitSalesPrice)

Q27. Which of the following is an appropriate description of the mapping between the relational model and relational database as its implementation?

- a) A domain is mapped to a character type or a character string type.
- b) A relation is mapped to a table.
- c) Attributes and columns are ordered from left to right.
- d) Neither tuples nor rows have duplicates.

Q28. When a storage location is to be calculated from a key value, which of the following methods enables the same calculation result to be obtained from different key values?

- a) B+ tree index
- b) Bitmap index
- c) Hash index
- d) Inverted index

Q29. Which of the following can change the deadlock state of the transaction back to the normal state?

- a) Commit
- b) Drop
- c) Rollback
- d) Roll Forward

Q30. Which of the following is located at layer 3 of the OSI basic reference model, and performs path selection and packet relay for an end-to-end communication?

- a) Data link layer
- b) Network layer
- c) Session layer
- d) Transport layer

Q31. When a PC connected to a LAN is starting up, which of the following protocols is used to automatically assign an IP address to the PC?

- a) DHCP
- b) DNS
- c) FTP
- d) PPP

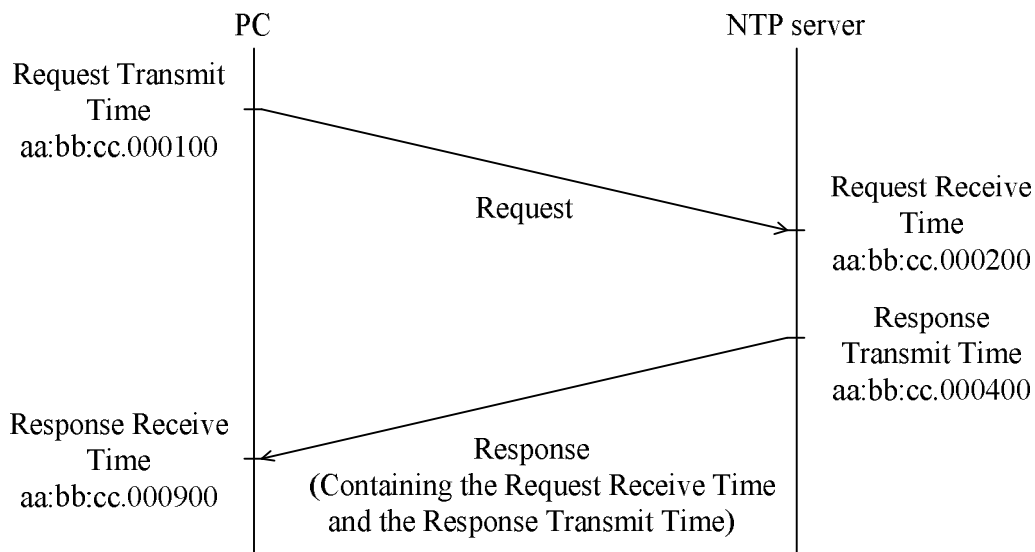
Q32. Which of the following describes an IPv6 feature not existing in IPv4?

- a) 128-bit addressing is introduced for the IP address space.
- b) An IP address is represented as a pair of a network address and a subnet mask.
- c) Private addresses are introduced to use IP addresses efficiently.
- d) Subnet masks are introduced to use the address space efficiently.

Q33. In TCP/IP network, which of the following is a combination of information that identifies a TCP connection?

- a) IP address, Session ID
- b) IP address, Port number
- c) MAC address, Session ID
- d) Port number, Session ID

Q34. The figure below shows the basic mechanism to synchronize clocks using the NTP. A response from the NTP server contains a Request Receive Time and a Response Transmit Time. The PC calculates the difference between its internal clock and the NTP server clock using the four times shown in the figure. How is the internal clock of the PC different from that of the NTP server? Here, the request and the response require the same transmission time, and each time in the figure shows the time on the internal clock of the PC or the NTP server. In an expression aa:bb:cc.ddd, aa, bb, cc, and dddd represent hour, minute, second, a fraction of a second (in microseconds), respectively.



- a) 100 microseconds fast
- b) 200 microseconds fast
- c) 500 microseconds fast
- d) 700 microseconds fast

Q35. Which of the following is a form of malware that requires a host in order to propagate from one computer to another?

- a) Trojan horses
- b) Viruses
- c) Worms
- d) Zombies (Bots)

Q36. Which of the following is the term used to describe an attack where attackers exploit a vulnerability of computer systems before a patch fixes the vulnerability?

- a) Backdoor attack
- b) Man-in-the-middle attack
- c) Rootkit attack
- d) Zero-day attack

Q37. Which of the following is an appropriate description of a buffer overflow attack?

- a) An attack that floods the memory area secured by a program by continuously sending long character strings or data to seize access privileges from the program, and causes malfunctions
- b) An attack that fraudulently overwrites cache information
- c) An attack that sends a large amount of data continuously to the target server to place an excessive load on the server's CPU and memory, and obstructs its service
- d) An attack that takes advantage of the vulnerabilities in software before the software vendor can provide a fix for the vulnerability

Q38. A typical example of personal security threats is information leakage. Which of the following is the most appropriate measure to prevent information leakage?

- a) Data containing important information is encrypted with a private key before sending it to the receiver via email. In a separate email, the private key is sent to the receiver so that the receiver can decrypt the data.
- b) Data containing important information is encrypted with the public key received in advance from the receiver before sending it to the receiver via email. The receiver then decrypts the data with the private key that the receiver has created as the pair of public/private keys.
- c) Data containing important information is password-locked, and it is attached in an email that includes the password in the text part of the email. Before sending the email, the receiver address is checked to make sure that the email is sent to the correct address.
- d) Stored data containing important information is compressed as much as possible before giving a USB memory to someone so that the new user can utilize the rest of the memory space effectively.

Q39. When the process shown in the procedure below is performed, in addition to the detection of message falsification, which of the following is what recipient B is able to do?

[Procedure]

Process of sender A

- (1) A hash function is used to generate a digest from a message.
- (2) The digest generated in (1) is encrypted with the sender A 's private key to generate a digital signature.
- (3) The message and the digital signature generated in (2) are sent to recipient B .

Process of recipient B

- (4) The same hash function in the process of sender A is used to generate a digest from the received message.
- (5) The received signature is verified by comparing the digest generated in (4) and the digest generated by decrypting the received digital signature with the sender A 's public key that recipient B received in advance from sender A .

- a) Confirming that the message is from sender A
- b) Detecting wiretapping on the message
- c) Identifying the areas of falsification
- d) Preventing leakage of the message

Q40. Among the techniques for code breaking given below, which of the following is classified as a brute force attack?

- a) By observing the difference between two different items of plain text and their encrypted text, the key is identified.
- b) For a given set of plain text and encrypted text, the key is identified by using all possible combinations.
- c) The encrypted text is decoded by analyzing the electromagnetic waves that an encryption device emits during the operation.
- d) The statistical bias of an encryption function is approximated with a linear function, and the encrypted text is decoded.

Q41. Which of the following is an appropriate terminology concerning the behavior that documents retrieved from distinct origins are isolated from each other?

- a) Clickjacking
- b) Cross-Origin Resource Sharing (CORS)
- c) Cross-Site Request Forgery (CSRF)
- d) Same-Origin Policy

Q42. When a mirror port is prepared to allow a LAN analyzer to be used to investigate the cause of a network failure, which of the following is a point to consider?

- a) In preparation for a failure, it is necessary to inform network users of the storage location and usage method of the LAN analyzer.
- b) Since LAN cables must be temporarily disconnected during measurement, it is necessary to notify network users in advance of the date and time of measurement.
- c) Since the LAN analyzer can display the packets that pass through the network, it is necessary to pay attention to misuse or abuse such as wiretapping.
- d) Since the LAN analyzer disposes of packets, it is necessary to restrict the use of the non-target computers during measurement.

Q43. Which of the following is an appropriate term for an organized and highly skilled team, whose mission is to continuously monitor and improve the organization's security posture while preventing, detecting, analyzing, and responding to cyber security incidents with the aid of both technology and well-defined processes and procedures?

- a) Cybersecurity
- b) Incident Management Center (IMC)
- c) Network Operations Center (NOC)
- d) Security Operations Center (SOC)

Q44. When a packet filtering firewall controls packets by using a list of rules, which of the following is the rule that is applied to packet *A* and its action? Here, the firewall applies the rules shown in the list below in the order number 1–4, and if a rule is applied, then the remaining rules are not applied.

[List of rules]

Number	Source Address	Destination Address	Protocol	Source Port number	Destination Port number	Action
1	10.1.2.3	*	*	*	*	Blocked
2	*	10.2.3.*	TCP	*	25	Permitted
3	*	10.1.*	TCP	*	25	Permitted
4	*	*	*	*	*	Blocked

Note: * indicates a pattern that applies to any value.

[Packet *A*]

Source Address	Destination Address	Protocol	Source Port number	Destination Port number
10.1.2.3	10.2.3.4	TCP	2100	25

- a) Blocked by number 1
- b) Blocked by number 4
- c) Permitted by number 2
- d) Permitted by number 3

Q45. Which of the following is the most appropriate description of polymorphism in object oriented design?

- a) It allows developers to define classes incrementally by reusing classes defined previously as the basis for new classes.
- b) It allows the analyst to focus on the important dimensions while ignoring nonessential dimensions.
- c) It combines the processes and data into a single object.
- d) It is the provision of a single interface to entities of different types.

Q46. In the development process, which of the following is an activity that should be performed in software architectural design?

- a) Analyzing the requests in incremental steps by arranging them in the form of a chart
- b) Describing the specifications so that the program is clarified on a line-by-line basis
- c) Obtaining the opinion of the customer and deciding the specifications
- d) Transforming the requirements for the software item into an architecture that describes its top-level structure and identifies the software components

Q47. Which of the following is the most appropriate description of stack-trace in relation to debugging a program?

- a) A trace of call stack methods/functions/subroutines
- b) Stacking/gathering the traces left by other programs
- c) The traces left in memory from a stack data structure
- d) Tracing stack data structure for appropriate contents

Q48. Which of the following is an appropriate description concerning a state transition test in a system integration test?

- a) A method for black box tests that does not focus on a system's internal state.
- b) A method that checks whether a system behaves according to the designed combinations of events and internal states.
- c) A method that is suitable for tests of calculations and processing systems whose internal state does not change depending on the occurrence of an event.
- d) A method that uses a data flow diagram and a decision table to analyze the internal state of a system.

Q49. Which of the following is a method for analyzing a source and object codes, and extract program specifications and design information?

- a) Reengineering
- b) Refactoring
- c) Restructuring
- d) Reverse engineering

Q50. According to the ISO/IEC 12207 (Systems and software engineering – Software life cycle processes (SLCP)), the Software Implementation Process has the following lower-level processes:

- 1) Construction Process
- 2) Requirements Analysis Process
- 3) Architectural and Detailed Design Process
- 4) Integration and Testing process

Which of the following is an appropriate order for the Software Implementation Process?

- | | |
|----------------------|----------------------|
| a) 1) → 2) → 3) → 4) | b) 2) → 3) → 1) → 4) |
| c) 2) → 3) → 4) → 1) | d) 3) → 4) → 2) → 1) |

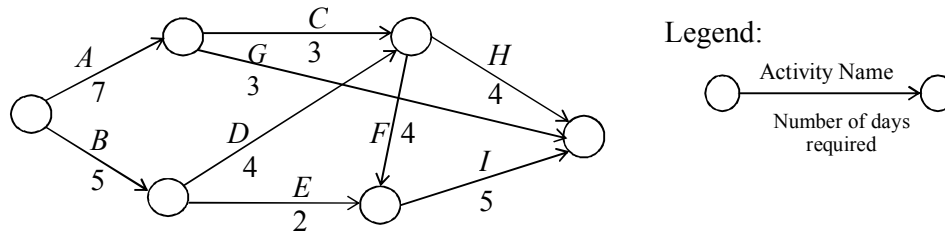
Q51. According to PMBOK, which of the following processes is included in the Executing Process Group?

- a) Process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality, standards and operational definitions are properly implemented
- b) Process of checking and recording results of executing the quality activities to assess performance and recommend necessary changes
- c) Process of estimating the type and quantities of material, people, equipment, or supplies required to perform each activity
- d) Process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact

Q52. Which of the following is an appropriate description of “Lead” relationship in project time management?

- a) It is the amount of time by which a successor activity can be advanced with respect to a predecessor activity.
- b) It is the amount of time by which a successor activity will be delayed with respect to a predecessor activity.
- c) It is the amount of time that a schedule activity can be delayed or extended from its early start date without delaying the project completion date or violating a schedule constraint.
- d) It is the number of work periods (hours, days) required to complete individual activities with the estimated resources.

Q53. The following arrow diagram shows the activities and the milestones of a project. What is the minimum project completion time in days?



- (a) 10 (b) 12 (c) 14 (d) 19

Q54. Company A is going to launch a new software product and the sales team then has to demonstrate it to the customers. There is a risk that the sales team does not understand the product and cannot provide good demonstrations. As a consequence, the sales team will make fewer sales and there will be less revenue for the company. So, the management decided to provide good training for the sales team. Which of the following is the best method to manage the risk?

- a) Risk acceptance b) Risk exploitation c) Risk mitigation d) Risk transfer

Q55. What is the function point value of a program that has the functions and characteristics described in the table below? Here, the correction coefficient of complexity is 0.75.

User function type	Count	Weighting coefficient
External input	1	4
External output	2	5
Internal logical file	1	10
External interface file	0	7
External inquiry	0	4

- a) 18 b) 24 c) 30 d) 32

Q56. Which of the following is an appropriate purpose of using a Work Breakdown Structure (WBS) in a software development project?

- a) To clarify the time sequence of activities, and understand the critical path that should be intensively managed
- b) To decompose a development task into smaller sub-tasks of a manageable size, and organize them into a hierarchical structure
- c) To optimize the total cost when there is a trade-off relationship between the number of days and the cost that is required for development
- d) To show the schedule of an activity by using a bar, and clarify the start point and end point of the activity as well as the progress at the current point

Q57. Which of the following device is used for protecting power supply circuits, communication devices, or other equipment from the overvoltage and the over current generated from the overvoltage?

- a) AVR
- b) CVCF
- c) SPD
- d) UPS

Q58. Which of the following is an appropriate precaution to be observed when monitoring the use of the capacity and performance of an online system in the capacity management process of IT service management?

- a) Incidents concerning capacity and performance are recorded.
- b) Multiple measurement items such as the response time and CPU utilization are monitored on a regular basis.
- c) Only the maximum value of performance data during a fixed period is focused upon, and deviation from the management limit is checked.
- d) Since the measurement of performance during online hours causes a decline in service level, measurement is performed during offline hours.

Q59. According to ITIL, which of the following is a description of a virtual service desk among the characteristics of a service desk organization?

- a) By using communication technology, services can be provided from a single service desk as observed by the user, even if the service desk staff members are distributed across multiple regions.
- b) Instead of deploying full-time service desk staff members, persons in charge of business operations such as research, development, sales, etc. manage concurrent posts.
- c) It exists either at the same or physically close location to the user base.
- d) With the purpose of improving cost effectiveness and communication efficiency, service desk staff members are stationed at a single or a few places.

Q60. In an information security audit, which of the following is a check item for confirming availability?

- a) Error checks during data input to be performed appropriately.
- b) Interruption duration to be managed so that the standard of the SLA specifying the interruption duration can be satisfied
- c) The database to be encrypted
- d) The unauthorized removal of an external memory medium to be prohibited

Q61. Which of the following situation is judged as appropriate when conducting an audit on a Business Continuity Plan (BCP)?

- a) A BCP having the same standard level is applied to all business operations without any prioritization.
- b) An emergency contact list of employees is created and updated to the latest version.
- c) During normal times, the BCP is not disclosed to employees.
- d) The important documents are stored collectively at one place without making copies.

Q62. Which of the following is an explanation of Enterprise Architecture (EA)?

- a) It is a technique to abstract and express the business processes with the four (4) basic elements of data flow, process, file, and data sources and absorption.
- b) It is a technique to analyze each business operation and information system through the four (4) systems of business, data, application, and technology and reexamine it from the viewpoint of total optimization.
- c) It is a technique to analyze or design a system by using schematic diagrams such as a class diagram, and it is developed by integrating and standardizing various methods that support an object-oriented design.
- d) It is a technique to clarify the data structure and the relationship between data items by expressing the conceptual data model with entities and relationships.

Q63. Which of the following is an explanation of a project organization?

- a) An organization is structured to extend across multiple companies to actively utilize external management resources such as in strategic alliances or joint development.
- b) Each organizational unit, structured on the basis of product, region, etc., is given responsibility for profit.
- c) It is formed only for a certain period of time to solve a given problem, and it is dissolved when the problem is solved.
- d) Tasks are divided according to functions, and orders and instructions are given to subordinates for each function.

Q64. Which of the following is a purpose of Business Process Management (BPM) in corporate activities?

- a) Analysis and effective use of information resources
- b) Conservation and analysis of customer information
- c) Continuous improvement of business processes
- d) Effective use of management resources

Q65. The purchase of two types of IT devices *A* and *B* is being examined. The payout period is set in consideration of the useful life of each of the devices. Which of the following is an appropriate description for the minimum amount of annual profit necessary to recover the amount of investment within the set payout period for *A* and *B*? Here, the annual profit is made evenly every year, and the interest rate is not considered.

	<i>A</i>	<i>B</i>
Amount of investment (10,000 yen)	90	300
Payout period (years)	3	5

- a) It is necessary for *A* and *B* to make the same amount of annual profit.
- b) It is necessary for *A* to make twice the annual profit than that of *B*.
- c) It is necessary for *B* to make 1.5 times the annual profit than that of *A*.
- d) It is necessary for *B* to make twice the annual profit that of *A*.

Q66. The weighted comprehensive evaluation method which integrates and quantifies the evaluation scores of multiple items is applied to quantitatively evaluate the effect of improvements. Which of the following is the improvement proposal that should be prioritized in the table below?

Evaluation items	Weighting factor of evaluation item	Improvement proposals			
		Proposal 1	Proposal 2	Proposal 3	Proposal 4
Labor savings	4	6	8	2	5
Shortening of time frame	3	5	5	9	5
Reduction of resources	3	6	4	7	6

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

Q67. Which of the following descriptions corresponds to the CSR procurement?

- a) Choosing the product with the lowest price to minimize costs
- b) Having multiple suppliers to avoid situations in which procurement is not possible after disasters
- c) Indicating procurement standards that consider the environment, human rights, etc., and requesting suppliers to comply with these
- d) Using EDI for purchasing goods to perform prompt and accurate procurement

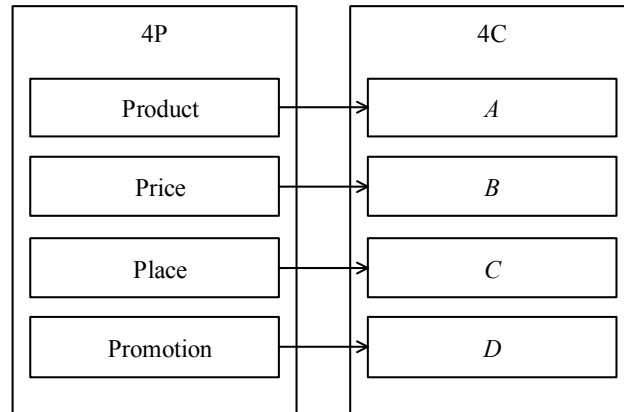
Q68. The RFP is presented to each vendor that has responded to an RFI. Which of the following should be done beforehand to proceed fairly with the future vendor selection processes?

- a) Besides the items of an RFP, giving a high evaluation to a vendor who is familiar with the current system to select that vendor easily
- b) Establishing processes of selection such as setting evaluation standards or weighting rules of conformity to the request items.
- c) Issuing unofficial agreements to all vendors to whom the RFP has been presented and requesting them to prepare a contract and a statement of work to accelerate the conclusion of the contract after the vendor selection.
- d) Preparing a bailout for a vendor who received a high evaluation on the response to the RFI, in case it fails in the selection.

Q69. Which of the following is a marketing technique used to provide incentives for distributors by applying conditions such as kickbacks and rebates, and increase the demands of consumers?

- | | |
|---------------------|---------------------------|
| a) Direct marketing | b) Pull strategy |
| c) Push strategy | d) Relationship marketing |

Q70. The figure below illustrates the relationship between the four (4) Ps proposed from the seller's viewpoint and the four (4) Cs proposed from the buyer's viewpoint in the marketing mix. Which of the following corresponds to blank *A* in the figure below? Here, a) through d) correspond to one of blanks *A* through *D*, without an exception.



- a) Communication (interaction with customers)
- b) Convenience (convenience of customers)
- c) Cost (customers' expense)
- d) Customer value (value for customers)

Q71. The sales price of products is decided according to the different sales price setting methods. Which of the following approaches sets a high sales price by using the consumer psychology that high quality equals to high price?

- | | |
|--------------------------------------|-------------------------|
| a) Cost plus pricing | b) Differential Pricing |
| c) Marketing price following pricing | d) Prestige pricing |

Q72. Which of the following is an appropriate explanation of the technology *S*-curve?

- a) It represents the diffusion process of a new technology, where a frequency distribution curve shows the growth of the new technology diffusion gradually decreases as the product using the technology is popularized in the market.
- b) It represents the maturing process of technology. It shows that, during the time until the new technology is actually spread, the degree of awareness and expectation changes as time passes.
- c) It represents the process of technology progress. It shows that technology advances slowly at the beginning and then advances rapidly; thereafter, its progress gently becomes stagnant.
- d) It represents the relationship between production volume and unit cost. It shows the course of reduction in unit cost with an increase in cumulative production volume.

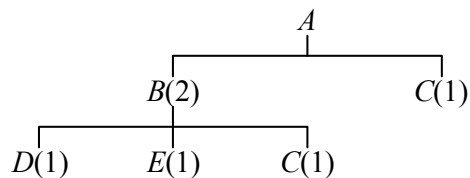
Q73. Which of the following is an example of Consumer Generated Media (CGM)?

- a) A website of a company through which the company publishes information about its management and financial status, as well as performance trends for individual investors
- b) A website of a company through which the company transmits information about the characteristics and usage methods of its products to the general consumers
- c) A website of a government organization through which the agency publishes information about its policies and administrative services to the general citizens
- d) A website such as a blog and SNS, etc. through which an individual transmits information to the general public about the evaluation of products, etc. that he/she has used

Q74. Which of the following indicates a price setting method based on the cost plus approach?

- a) Deciding the price by adding a margin right from the beginning with the prerequisite of offering a discount to the customer
- b) Deciding the price by incorporating the desired margin with reference to the manufacturing cost and business expenses
- c) Deciding the price on a level that can be expected to compete in the market
- d) Deciding the price step-by-step in view of maximum profits and minimum risks through price analysis

Q75. The figure below shows the relationships among components for product *A*, and a number in parentheses is the quantity of components needed to produce one unit of the upper-level product or component. When 10 units of product *A* are produced, how many units of component *C* must be ordered? Here, there are presently five units of component *C* in the inventory, and the components in the inventory must be used for the production before the order.



- a) 15
- b) 20
- c) 25
- d) 30

Q76. To secure transparency of business administration, which of the following is a concept that supervises and monitors a company's activities from the perspective of questions such as for whom the company runs its business, what the structure of the top management is like, and whether the organization has self-improvement capabilities?

- a) Core competence
- b) Corporate governance
- c) Corporate identity
- d) Stakeholder analysis

Q77. Which of the following items should be put under “Liabilities and Stockholder’s Equity” in a balance sheet?

- a) Cash b) Common stock c) Fixed assets d) Inventories

Q78. Which of the following type of financial statements shows the financial position of an enterprise at a particular point of time?

- a) Balance sheet b) Cash flow statement
c) Income statement d) Statements of shareholders’ equity

Q79. Which of the following is the role of a CIO?

- a) To implement investigation, research, and education of information technology
b) To make a computerization strategy from a corporate level perspective, and confirm and evaluate its consistency with business strategy
c) To manage a project through extensive business experience, knowledge of information technology, and leadership
d) To present the computerization proposal of his/her own department to the information system department as a representative of each department

Q80. The horizontal and vertical axes of an Operating Characteristic (OC) curve in quality management generally represent the percent defective of a lot and the success rate of a lot, respectively. Samples of size n are extracted from a lot of size N , and when the number of defective samples is equal to or less than the pass quantity C , the lot is considered to have passed, and when it exceeds C , the lot is considered to have failed.

Which of the following is a diagram that represents the trend of change in the OC curve when N and n are fixed and C takes the values 0, 1, and 2?

