



Spring 2011

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 spring Fundamental IT Engineer Examination conducted in 2011?

- a) March b) April c) May d) June

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










[Sample Answer]

Q1	<input checked="" type="radio"/>	<input type="radio"/> B	<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 logic gate symbols are applied as shown in the table below.

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

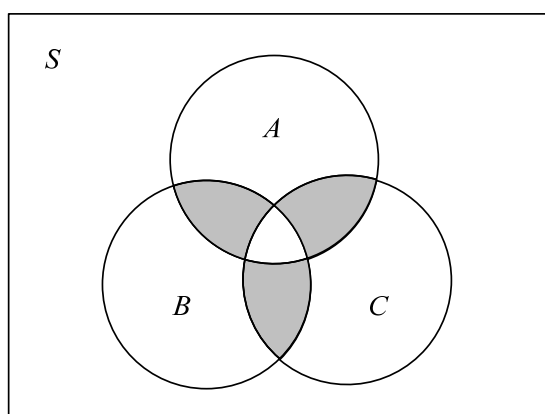
Note: The small circle or “bubble” on either the input or output terminal shows inversion or negation of the logic state.

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Q1. According to a survey of 100 students, there are 40 students studying English, 30 studying French, and 25 studying Spanish. In addition, 8 students are studying English and French, 6 are studying English and Spanish, 5 are studying French and Spanish, and 22 are not studying any of the three languages. Which of the following is the number of students studying all three languages?

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

Q2. When three subsets A , B , and C exist in the universal set S as shown in the diagram below, which of the following represents the shaded area? Here, each of A , B , and C indicates the area encompassed by the corresponding circle. $X \cup Y$ stands for the union set of X and Y , $X \cap Y$ for the intersection set of X and Y , $X - Y$ for the relative complement set of Y in X , and $X \oplus Y$ for the mutually exclusive set of X and Y .



- a) $(A \cap B) \cup (A \cap C) \cup (B \cap C)$
b) $((A \cap B) \cup (A \cap C) \cup (B \cap C)) \cap (A \oplus B \oplus C)$
c) $(A \cup B \cup C) - (A \oplus B \oplus C)$
d) $(A \cup B \cup C) - (A \cap B \cap C)$

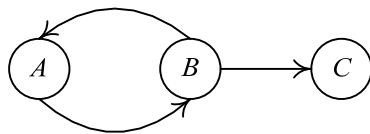
Q3. When the true and measured values are 1.744 and 1.720 respectively, what is the approximate relative error in percentage?

- a) -2.4 b) -1.4 c) 1.4 d) 2.4

Q4. What is the probability of getting a sum of 8 or 9 on a pair of dice, each of which is a regular hexahedron with faces numbered 1 through 6?

- a) $\frac{1}{18}$ b) $\frac{5}{36}$ c) $\frac{1}{4}$ d) $\frac{1}{3}$

Q5. An adjacency matrix is used for representing which vertices of a directed or undirected graph are adjacent to which other vertices. Which of the following is the appropriate matrix that can represent the directed graph below?



- a)

	<i>A</i>	<i>B</i>	<i>C</i>
<i>A</i>	1	1	1
<i>B</i>	1	1	1
<i>C</i>	0	0	1
- b)

	<i>A</i>	<i>B</i>	<i>C</i>
<i>A</i>	1	0	1
<i>B</i>	0	1	0
<i>C</i>	1	1	1
- c)

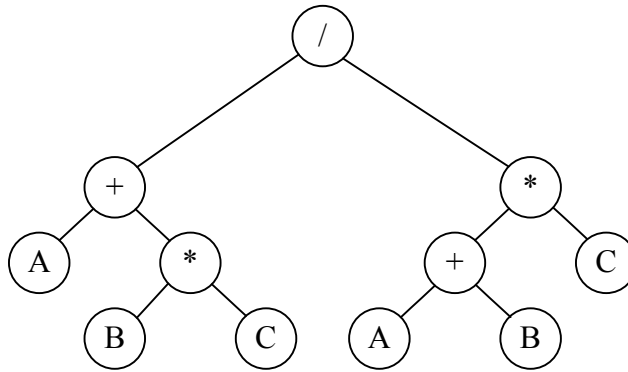
	<i>A</i>	<i>B</i>	<i>C</i>
<i>A</i>	0	1	1
<i>B</i>	1	0	1
<i>C</i>	0	0	1
- d)

	<i>A</i>	<i>B</i>	<i>C</i>
<i>A</i>	0	1	0
<i>B</i>	1	0	1
<i>C</i>	0	0	0

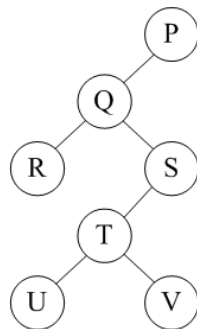
Q6. When the runtime complexity of an algorithm is represented by n^2 , which of the following is the running time for the algorithm to process one million elements? Here, n is the number of elements to be processed by this algorithm, and it takes 1 nanosecond to process only one element.

- a) 1 nanosecond b) 1 millisecond
c) 1 second d) 1,000 seconds

- Q7.** An expression tree is a binary tree that is used to represent a mathematical expression and generate any of the three representations (infix, prefix, and postfix notations) by using one of the three traversals (in-order, pre-order, and post-order traversals) of the binary tree. Which of the following is one of the possible expressions generated by the expression tree shown below?



- a) $(A * B + C) / ((A + B) * C)$ b) $(A + B * C) / ((A + B) * C)$
c) $(A + B / C) * ((A + B) * C)$ d) $(A + B * C) / (A + B * C)$
- Q8.** When the binary tree shown in the figure below is stored in a one-dimensional array $A[i]$ under the following conditions, what is the array index of the node “T”?



[Conditions]

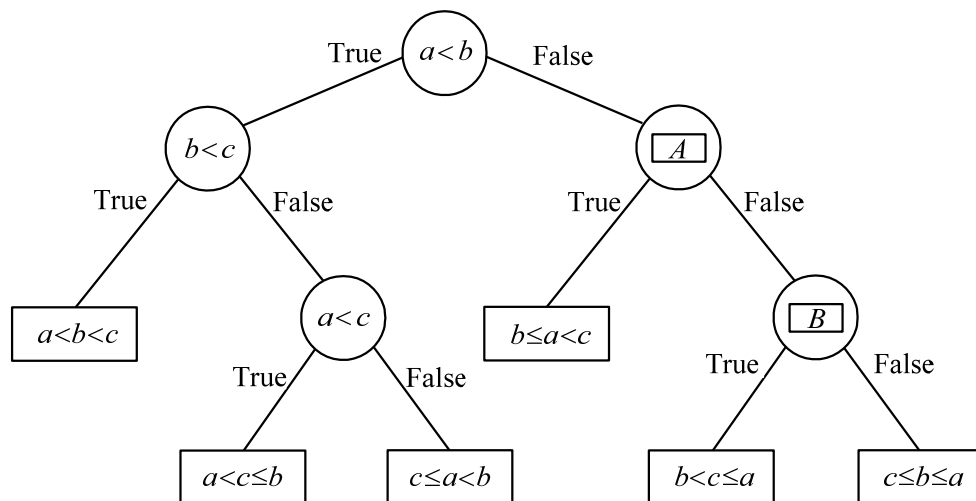
- The root node is stored in $A[1]$.
- The left child of the node stored in index “ i ” is in index “ $2i$ ”.
- The right child of the node stored in index “ i ” is in index “ $2i+1$ ”.
- The parent of the node stored in index “ i ” is stored in index “ $i/2$ ” (rounded down to the nearest integer).

- a) 3 b) 6 c) 7 d) 10

Q9. After seven keys 15, 11, 16, 2, 17, 22, 13 are sequentially stored in an empty hash table where the chain method is used for resolving collisions, how many comparisons are needed to search for the key 22 in the table? Here, the hash table size is 5, and the hash function “ $x \bmod 5$ ” is used for the key x . In the chain method, each table entry has a linked list, and synonymous keys are stored at the tail of each linked list.

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

Q10. When the decision tree shown below is used for sorting three numbers a , b , and c , which of the following is the correct combination of expressions to be inserted in blanks A and B ?



	A	B
a)	$a < c$	$b < c$
b)	$a < c$	$c < a$
c)	$b < c$	$a < c$
d)	$c < a$	$b < c$

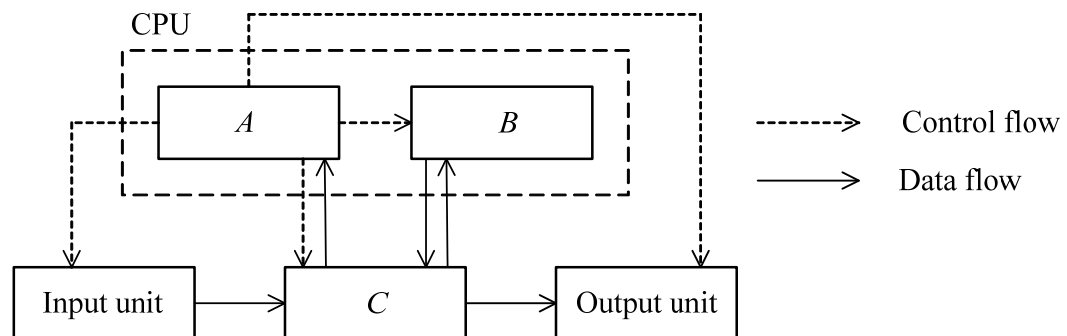
Q11. Which of the following is the programming language that is interpreted and executed directly from source code or bytecode and can be used as batch control programs or embedded as part of application programs?

- a) Functional language
- b) Logic language
- c) Object-oriented language
- d) Script language

Q12. When XML is compared with HTML, which of the following functions is enabled only by using XML?

- a) Describing documents by using tags
- b) Displaying dynamic web pages
- c) Embedding hyperlinks to other documents
- d) Exchanging structured information

Q13. The basic configuration of a computer, which includes five major units (or sometimes called five major functions), is shown in the figure below. Which of the following is the appropriate combination of configuration elements to be inserted in blanks *A* through *C*?



	<i>A</i>	<i>B</i>	<i>C</i>
a)	Control unit	Memory	Operation unit
b)	Control unit	Operation unit	Memory
c)	Memory	Control unit	Operation unit
d)	Operation unit	Control unit	Memory

Q14. In a processor equipped with cache memory, there are two major types of write policies: write-back and write-through. Which of the following is an appropriate description concerning write-back cache?

- a) Every write to cache causes a write to main memory, so no inconsistency between cache and main memory occurs.
- b) When data is flushed out of cache, main memory need not be updated.
- c) When data is repeatedly written to the same address, the number of accesses to main memory increases.
- d) Write-back is more efficient than write-through because of the reduced number of accesses to main memory.

Q15. There are various types of USB connectors. When an external storage device is connected to a PC by using a USB cable, which of the following types of plugs should be inserted into an available USB receptacle of the PC?

- a) USB A b) USB B c) USB mini A d) USB mini B

Q16. When a PC is equipped with a sound card, which of the following ports can be used for enabling the PC to communicate and synchronize with electronic musical instruments, such as synthesizers and drum machines?

- a) DVI b) HDMI c) MIDI d) RJ45

Q17. Which of the following is an appropriate explanation of a plasma display?

- a) It displays images by using light emitted from gas discharge.
- b) It does not emit light itself, so it uses a backlight module to display images.
- c) It emits electron beams from an electron gun that hit and light up the phosphors on the surface of a cathode ray tube to display letters and images.
- d) It has a structure consisting of a pair of electrodes and an organic compound layer, which emits light when electricity is applied.

Q18. Which of the following is the most appropriate term to represent a pay-per-use model for enabling available, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service provider interaction?

- a) Cloud computing
- b) Context aware computing
- c) Grid computing
- d) Social computing

Q19. Which of the following is an appropriate explanation of a fault tolerant system?

- a) It is a backup system provisioned at a remote site as preparation for a regional disaster.
- b) It is a system that continues providing functions required for system operations as a whole even if a part of the system fails to operate properly.
- c) It is a system that processes one transaction with multiple processors in parallel and checks the results.
- d) It is a system that shares resources by connecting multiple processors via a network.

Q20. Among indicators of RAS used for evaluating the level of system reliability, which of the following is a measure of availability?

- a) $\frac{MTBF}{MTBF + MTTR}$
- b) $MTBF + MTTR$
- c) MTBF
- d) MTTR

Q21. Air brake systems are provided for railway trains, trucks, etc. Loss of air for any reason automatically applies the brakes and brings the vehicle to a stop. Which of the following is the most appropriate term that means this capability?

- a) Fail-over
- b) Fail-proof
- c) Fail-safe
- d) Fail-soft

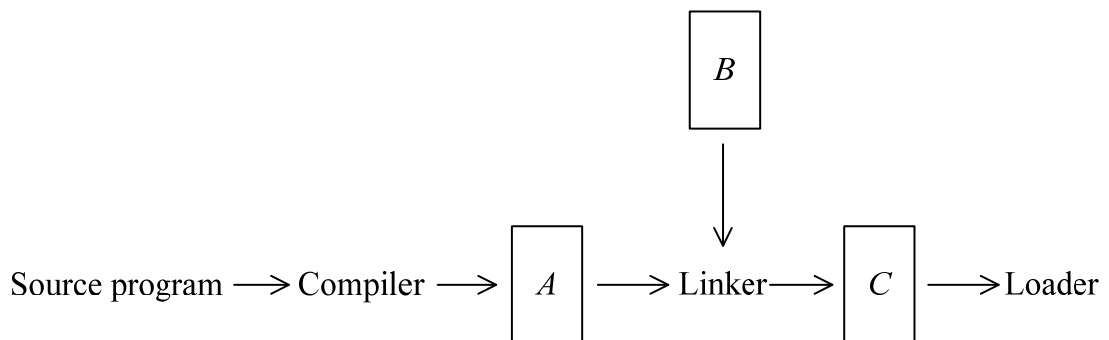
Q22. In the virtual memory of a paging system, when a page that does not exist in main memory is accessed, which of the following shows the appropriate order of processes and states? Here, there is no empty page frame available in main memory.

- a) Decision of the page for replacement → Page fault → Page-out → Page-in
- b) Decision of the page for replacement → Page-in → Page fault → Page-out
- c) Page fault → Decision of the page for replacement → Page-in → Page-out
- d) Page fault → Decision of the page for replacement → Page-out → Page-in

Q23. Which of the following is the reason for using a real-time OS with a hard real-time control system such as engine control and hard disk control?

- a) A mechanism that completes the processing for each event within a specified time is necessary.
- b) A mechanism that improves the throughput of the entire system is necessary.
- c) A mechanism that runs multiple independent programs concurrently is necessary.
- d) A memory protection mechanism to prevent virus intrusion is necessary.

Q24. The diagram below shows the flow from program translation to execution. Which of the following is the appropriate combination of inputs and outputs to and from compiler, linker, and loader?

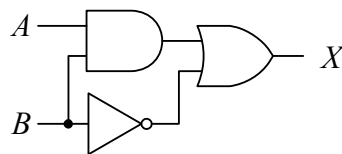


	<i>A</i>	<i>B</i>	<i>C</i>
a)	Library module	Load module	Object program
b)	Load module	Library module	Object program
c)	Load module	Object program	Library module
d)	Object program	Library module	Load module

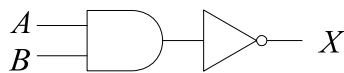
Q25. Which of the following is an appropriate description concerning open source software defined by OSI?

- a) When open source software is created for a specific industry, its source code can be released exclusively to that industry.
- b) When open source software is modified such as for internal use but not redistributed, the modified source code is not required to be released to the public.
- c) When open source software is redistributed after modification, it is required to be distributed under the same distribution conditions and license as the original work.
- d) When open source software is redistributed as a product by a third party, the developer of the original software can charge a license fee to the third party.

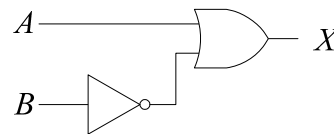
Q26. Which of the following can obtain the same output result as the logic circuit shown below?



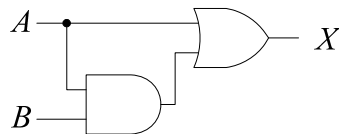
a)



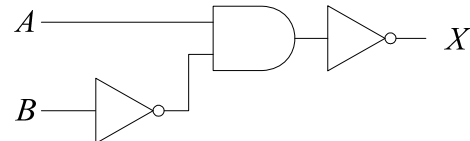
b)



c)



d)



Q27. Which of the following is a basic component of a sequential circuit that has two stable states and is used in a memory cell of SRAM?

- a) Adder
- b) AND gate
- c) Capacitor
- d) Flip-flop

Q28. From viewpoints of not only home users but also professional or experienced users, which of the following is the most appropriate GUI component that should be used for entering date of birth (four-digit year, two-digit month, and two-digit day) in three separate fields on the screen?

- a) Check box
- b) Combo box
- c) Drop-down list
- d) Radio button

Q29. Audio is sampled 11,000 times a second, and each sampled value is recorded as 8-bit data. How many minutes of audio at maximum can be recorded in flash memory with a capacity of 512×10^6 bytes?

- a) 77
- b) 96
- c) 775
- d) 969

Q30. Which of the following is the data model that is organized as a tree-like structure using a parent-child or one-to-many relationship?

- a) Hierarchical data model
- b) Network data model
- c) Object data model
- d) Relational data model

Q31. Which of the following is the appropriate description concerning the third normal form (3NF) in a relational database?

- a) A set of relations or tables is in 3NF if all the key attributes are defined and it contains no repeating groups.
- b) A set of relations or tables is in 3NF if and only if it contains no repeating groups and every non-key attribute is fully functionally dependent on the entire primary key.
- c) A set of relations or tables is in 3NF if and only if it is in 2NF and every non-key attribute is mutually independent and directly dependent on the entire primary key.
- d) A set of relations or tables is in 3NF if and only if it is in Boyce-Codd normal form and contains no more than one multi-valued dependency.

Q32. Which of the following is the main purpose of using indexes in relational database tables?

- a) To enhance data security
- b) To ensure data integrity
- c) To improve query performance
- d) To prevent risk of deadlocks

Q33. Which of the following is the appropriate table that can be retrieved by performing the projection operation in order to choose the column “Product name” from the Cartesian (or direct) product of two tables T_1 and T_2 ?

T_1

Order number	Customer name	Product number
001	Brian Williams	A-01
002	Jake Forester	A-02
003	Sylvia Fox	A-02

T_2

Product number	Product name
A-01	Radio
A-02	TV set
A-03	CD player

a)

Product name
Radio
TV set

b)

Product name
Radio
TV set
CD player

c)

Product name
Radio
TV set
TV set

d)

Product name
Radio
TV set
TV set
CD player

Q34. When a transaction to the relational database is successfully completed, which of the following SQL commands can be used for making changes permanent?

- a) Checkpoint b) Commit c) Rollback d) Savepoint

Q35. Which of the following is the most appropriate description concerning the primary role of an SQL query optimizer?

- a) It determines the most efficient way to execute a query.
- b) It minimizes the number of rows in a result set.
- c) It parses a query and improves it for efficient network transmission.
- d) It stores the results of frequently used queries in a cache.

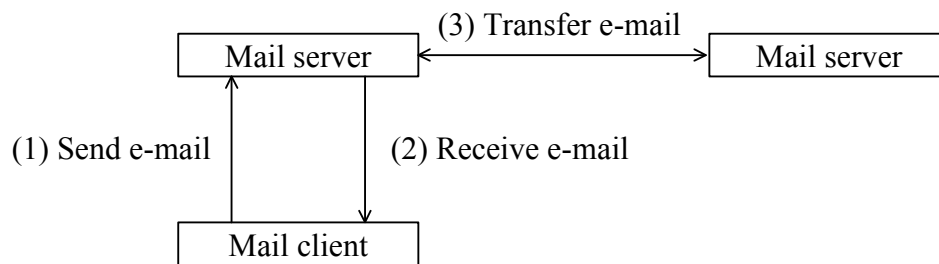
Q36. Which of the following is an appropriate explanation concerning the function of a proxy server?

- a) It is a centralized point of access to the Internet, and also provides an effective and efficient way to improve network performance by memory and disk caching of commonly visited web sites.
- b) It is used for translating, or resolving, domain names into IP addresses. Every time a domain name is entered, it resolves that name to the appropriate IP address and allows communication across the Internet.
- c) It provides a simple and secure way to upload and download information, either text or graphics, between the server and clients over the Internet.
- d) It provides a way to manage and automate the assignment of IP addresses from a central point, and sends a new IP address and other network configuration information automatically when a client is plugged into the Internet.

Q37. In the OSI basic reference model, which of the following is the appropriate layer that provides end-to-end communication services for applications, and also provides convenient services such as connection-oriented or connectionless data stream support, reliability, flow control, and congestion control?

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

Q38. Which of the following is an appropriate combination of the protocols that are used for transmitting and receiving e-mail as shown in the diagram below?



	(1)	(2)	(3)
a)	POP3	POP3	SMTP
b)	POP3	SMTP	POP3
c)	SMTP	POP3	SMTP
d)	SMTP	SMTP	SMTP

Q39. Which of the following describes the role of DNS in the TCP/IP network?

- a) Allocating an unused IP address from the IP addresses registered in the server, in response to a request from a PC for IP address assignment
- b) Enabling access to the Internet by converting an in-company private IP address into a global IP address
- c) Linking a name, such as a domain name or a host name, with an IP address
- d) Making it possible to call a program in a server by specifying its name without regard to the IP address of the server

Q40. When the CRC (Cyclic Redundancy Check) function is implemented by calculating a generator polynomial, which of the following is used as a CRC code (sometimes simply called CRC)?

- a) Dividend
- b) Quotient
- c) Remainder
- d) Summation

Q41. Which of the following is an algorithm that can be used for asymmetric (or public key) cryptography?

- a) AES
- b) DES
- c) RC4
- d) RSA

Q42. In e-commerce such as mail-order business, there is a risk that dealers or users are damaged by falsifying, spoofing, and repudiation at the time of sales order or purchase order. Which of the following is an appropriate security technology that can cope well with all of these three threats?

- a) Digital signature
- b) Firewall
- c) Junk mail filter
- d) Virus check

Q43. Which of the following is an appropriate description concerning the PIN (Personal Identification Number) of an IC card used for user authentication?

- a) Every PIN is set by combining the number information stamped on the surface of an IC card.
- b) Since each user can be identified with an IC card, all users have a common PIN to reduce administrative burden.
- c) When an IC card is lost, a new one is issued and a PIN is set. After that, the lost IC card is canceled.
- d) When an IC card is sent, its PIN is not sent under the same cover. The user is notified of the PIN in another way.

Q44. When a biometric authentication system is installed, which of the following is the most appropriate point to be considered?

- a) Combining various measures, such as heuristics, in addition to frequent update of pattern files
- b) Requesting a trusted third party to issue an individual user's digital certificate
- c) Setting up the system in consideration of both the probability of incorrectly rejecting an authorized user and that of incorrectly accepting an unauthorized user
- d) Using a library capable of sanitizing data which can cause a system malfunction

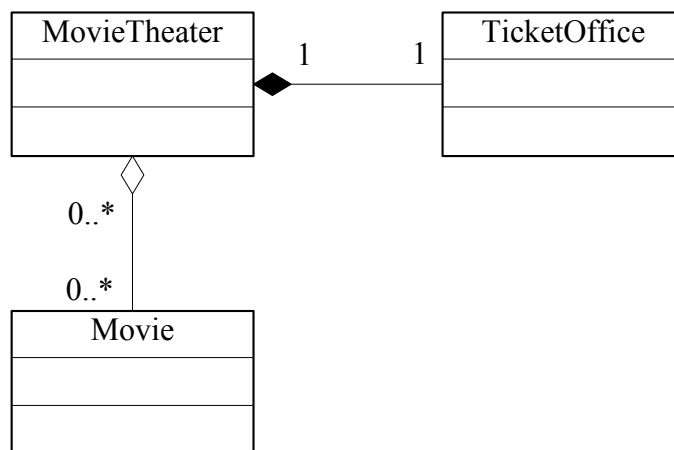
Q45. Which of the following is an explanation of a risk transfer?

- a) Breaking down or aggregating risks into components that can be easily handled
- b) Eliminating risk factors
- c) Reducing the incidence of losses
- d) Taking financial measures such as purchasing insurance

Q46. Among UML diagrams, which of the following is the most appropriate diagram that can describe more easily dynamic behaviors of business process and events triggering the process, and can also represent various workflow routing types such as sequential routing, join, split, iteration, and parallel routing?

- a) Activity diagram
- b) Communication diagram
- c) Sequence diagram
- d) State machine diagram

Q47. Which of the following is the appropriate relationship between “MovieTheater” and “TicketOffice” shown in the class diagram below?



- a) Aggregation
- b) Association
- c) Composition
- d) Generalization

Q48. Which of the following is the technique that is used to redesign or reorganize an existing body of program code without changing its externally observable behavior?

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

Q49. There is a program module that is executed only when the value of an integer variable x is within the range of 50 through 100 ($50 \leq x \leq 100$). When this module is tested using the boundary value analysis, which of the following is the appropriate combination of the values to be tested?

- a) 49, 50, 99, 100
- b) 49, 50, 100, 101
- c) 50, 51, 99, 100
- d) 50, 51, 100, 101

Q50. The test phase of software development can be divided into four stages: unit test, integration test, system test, and operational test. When the descriptions A through D shown below are applied to the four stages, which of the following is the appropriate combination of each stage and its description?

A : The test is done by developers in order to confirm the overall system functions.

B : The test is done, mainly to check interface between modules or components.

C : The test is done on a module or component basis.

D : The test is done under the production environment, and users take a key role in testing.

	Unit test	Integration test	System test	Operational test
a)	B	C	A	D
b)	B	C	D	A
c)	C	B	A	D
d)	C	B	D	A

Q51. Which of the following is an appropriate activity to be performed in the first phase of system development?

- a) Analyzing the current business operations and organizing system requirements
- b) Designing the internal structure of each program
- c) Designing the user interface
- d) Dividing subsystems into programs and designing the details of each program

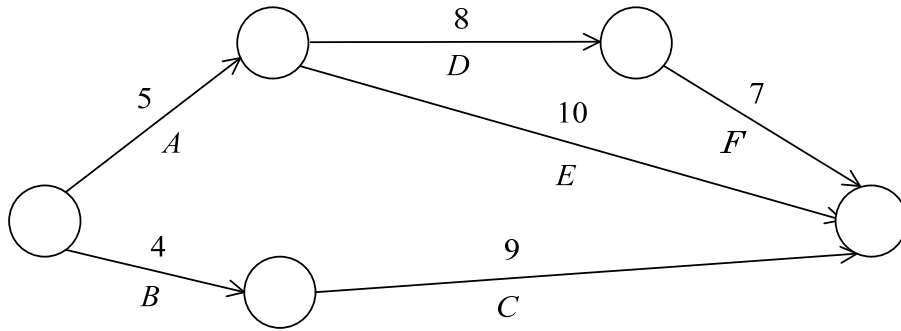
Q52. Which of the following is an explanation of the waterfall model in system development?

- a) Instead of building complicated software from scratch, the development starts by repeating analysis, design, implementation, and testing of simple parts, and gradually expands its scale.
- b) Instead of building everything at once, the system is developed in incremental steps on the top of the basic system architecture according to the priority of each function.
- c) Development makes progress by creating a prototype and receiving feedback on user requests.
- d) The development process is divided into some phases, such as design, implementation, and test. Once a phase is completed, its deliverables are used for conducting the next phase.

Q53. Which of the following is the most appropriate description concerning maintenance and management activities that are performed in a development environment for embedded systems used during the development of a product?

- a) It is desirable to maintain and manage the development environment by updating it to the latest environment, even if it is not frequently used.
- b) It is desirable to maintain and manage the development environment such as through periodic operational checks regardless of usage frequency.
- c) It is not necessary to maintain the development environment after the commercialization of the product because the environment is not used again.
- d) The development environment leased from a rental company is always maintained under the responsibility of the rental company.

Q54. In an arrow diagram shown below, when the number of days required to complete activity F can be reduced to one day from seven days, how many days can be reduced by the time all the activities A through F are completed? Here, in the diagram, each number shown beside the arrow indicates the number of days required to complete the activity.



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

Q55. The table below shows the series of activities for a certain project. The numbers in the table indicate how long (in weeks) it takes to complete each activity. Prior to starting each activity, the previous activities shown in the table must be completed. What is the total float (in weeks) of activity C ? Here, the total float of an activity is the amount of time by which it may be extended or delayed without delaying completion of the project, assuming no extension or delay in any other activity.

Activity	Time (weeks)	Previous activity
A	5	—
B	2	—
C	2	A
D	7	B
E	5	C, D
F	8	E
F		—
(Completed)		F

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

Q56. The person-months required to develop a system were originally estimated at 150 person-months. 60 person-months have been invested so far, 30% of the total system has been completed, and the project is behind schedule. By how many person-months does the project overrun the original estimate in order to complete the development of this system, on the assumption that the same productivity is maintained in the future?

- a) 50 b) 90 c) 105 d) 140

Q57. The function that starts up a computer via a LAN is called WOL (Wake on LAN). Which of the following can be performed efficiently by using this function?

- a) Detection of a system malfunction
- b) Maintenance of a PC at a remote location
- c) Management of the traffic condition
- d) Monitoring of unauthorized access

Q58. Which of the following is an appropriate description concerning quality management in system development?

- a) Although performance such as response time and batch processing time is not included in quality management, marginal performance should be measured because its impact on business operations is significant.
- b) In the development where a system is divided into several subsystems, if the quality of each subsystem can be assured, the quality of the entire system can also be assured at the same time.
- c) The sufficiency level of functions required for the system, as well as all deliverables such as documents, should be subject to quality management.
- d) When a system is developed by combining commercial products and self-developed programs, only self-developed programs should be subject to quality management.

Q59. Which of the following is the most appropriate description concerning the job roles of a database administrator and a data administrator?

- a) Creating an application from the external schema of the given database
- b) Designing a database, maintaining it, monitoring operations, and recovering from failures
- c) In database system development, allocating development staff and resources optimally, and managing them efficiently
- d) Inspecting at delivery whether the database application to be delivered meets the specifications such as functions, performance, and operability

Q60. Five processes and one function in ITIL v2, which are classified as service support indicating daily IT service operation methods, are summarized in the table below. Which of the following is the process to be entered in blank *A* in the table?

Type	Name	Description
Process	Incident management	For incidents which have occurred, restore normal service operations as soon as possible in order to minimize adverse effects on business.
	<i>A</i>	Identify the root causes of the incidents or problems, minimize their adverse effects on business, and prevent them from occurring again.
	Configuration management	Constantly have a correct understanding of CIs (Configuration Items) required to deliver IT services by using a configuration management database, and provide effective information for each process.
	Change management	For each RFC (Request For Change), determine the effect of modification, assess its impact or priority, and approve or reject it.
	Release management	Release approved components to the correct location at an appropriate time.
Function	Service desk	Act as a single point of contact between IT service users and the service provider.

- a) Availability management
- b) IT service continuity management
- c) Problem management
- d) Service level management

Q61. When security control of an information system is divided into three categories, including prevention, detection, and recovery, which of the following is applicable to recovery?

- a) Contingency plan
- b) Message authentication
- c) Segregation of duties between operators and programmers
- d) Use of password

Q62. Which of the following is a situation where the independence of system auditors is maintained?

- a) Appointing system auditors hired from an auditing company as internal auditors and having them audit internal business system development
- b) Appointing the staff members of the sales department as members of the audit team and having them audit the measures that the sales department has in place to protect personal information
- c) Requesting the auditing department of the IT vendor, to which the operations of the internal business system are outsourced, to perform an external audit of internal business system operations
- d) Transferring the staff members of the systems department to the auditing department and having them audit the maintenance of the system that they developed when they worked in the systems department

Q63. Among the system audit items related to master file management, which of the following is pertinent to availability?

- a) Only those who are assigned a privilege account are allowed to maintain the master file.
- b) The server storing the master file is duplicated to improve fault tolerance.
- c) The system has a function for checking data input to the master file.
- d) The system has a function for searching and editing multiple data items of the master file collectively.

Q64. Which of the following is an appropriate explanation of BPO?

- a) Contracting out all business processes of a company's specific department, such as an administrative department or call center, to an external service provider, together with the operations of a business system
- b) Operating a system by renting part of the processing power and memory capacity of the server owned by a telecom carrier, etc., instead of taking possession of a company's own server
- c) Reducing the cost of software development by using a temporary staff agency's worker whose labor cost is lower than that of a company's regular employee
- d) Using software functions offered by an external service provider via a network, instead of taking possession of company's own software

Q65. Which of the following dramatically improves a company's performance, including cost, quality, service, speed, and so on, by fundamentally reviewing and redesigning business processes?

- a) Alliance
- b) Core competence
- c) Going concern
- d) Reengineering

Q66. Which of the following enables users to connect to the system of a service provider via the Internet and make online use of the necessary functions of the applications offered by the service provider as needed?

- a) ERP
- b) SaaS
- c) SCM
- d) XBRL

Q67. Which of the following is the activity that is performed in the phase of requirements definition?

- a) Creating a policy on the computerization needed to achieve business objectives and targets
- b) Developing software that meets the needs described by the customer
- c) Identifying the specifications of the business operations and system to be newly established and clarifying the scope of computerization
- d) Operating software products and providing users with operations support

Q68. When the effect of improvement is evaluated quantitatively, there is a method called weighted comprehensive evaluation to put together the results of evaluating multiple items and quantify those results. Among the improvement plans shown in the table below, which one should take precedence?

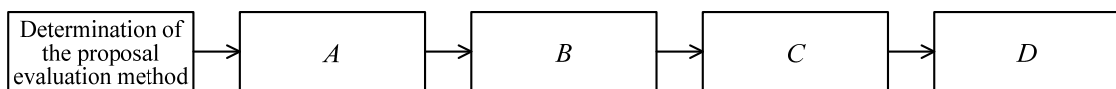
Evaluation item	Weight of evaluation item	Improvement plan			
		Plan 1	Plan 2	Plan 3	Plan 4
Labor saving	4	6	8	2	5
Lead time reduction	3	5	5	9	5
Resource saving	3	6	4	7	6

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

Q69. Among the costs related to computerization, which of the following is included in the running cost?

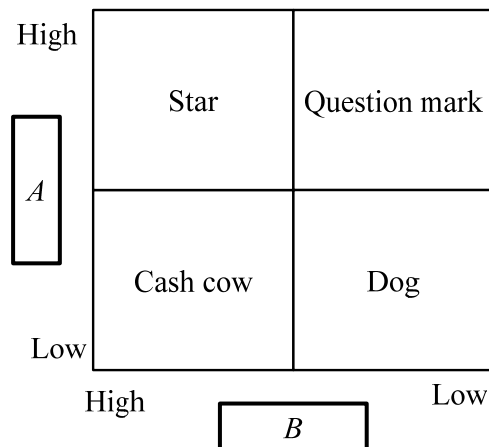
- a) Consulting cost for developing information systems strategy
b) Cost of systems engineers who define requirements
c) Installation cost of software packages
d) Maintenance cost for information equipment such as servers

Q70. When the procurement process that begins with “determination of the proposal evaluation method” is classified into selection of the supplier, procurement, issuance of the RFP (Request for Proposal), and proposal evaluation and then aligned in the appropriate order, which of the following is inserted in blank *C*?



- a) Issuance of the RFP
b) Procurement
c) Proposal evaluation
d) Selection of the supplier

Q71. Which of the following is the appropriate combination of the phrases to be inserted in blanks *A* and *B* shown in the PPM (Product Portfolio Management) matrix below?



	<i>A</i>	<i>B</i>
a)	Market growth rate	Percentage of market share
b)	Market growth rate	Ratio of gross profit to net sales
c)	Percentage of market share	Market growth rate
d)	Ratio of gross profit to net sales	Percentage of market share

Q72. Which of the following is a niche strategy for business management?

- a) Emphasis on cash flow
- b) Lead time reduction
- c) Market specialization
- d) Vertical integration

Q73. Which of the following is an appropriate explanation of knowledge management?

- a) Accomplishing management innovations for one's own company by a comparative analysis with other companies that achieve superior performance
- b) Conducting business by focusing on the company's unique know-how, technology, and other advantages that cannot be imitated by other companies
- c) Conducting business while sharing information, skills, or understanding dispersed in the company and enhancing the problem-solving ability of the entire workforce
- d) Conducting business with a flat organizational structure having as few levels as possible in order to enable quick decision making

Q74. Which of the following is a method where tasks are performed according to the steps (1) through (3)?

- (1) Calculate the necessary quantities of the components, based on the types, quantity, and component list for products planned to be produced in a certain period of time.
- (2) Calculate the net ordering quantity for each component, in consideration of the quantity in stock available for allocation.
- (3) Determine the reorder timing for each component, in consideration of the lead time for manufacturing or procurement or both.

a) CAD b) ERP c) JIT d) MRP

Q75. Which of the following uses RFID?

- | | |
|------------------|----------------|
| a) Bar code | b) IC tag |
| c) Magnetic card | d) Memory card |

Q76. Which of the following is an appropriate explanation of a divisional organization?

- a) A share of profit responsibility is assigned to each of the organizational units formed by product, region, and so on.
- b) Business operations are classified by function, and subordinates are given orders and instructions on the individual functions.
- c) The needs for the business environment are met by actively utilizing external management resources through strategic alliance, joint development, and so on.
- d) The organization is formed for a certain limited period of time to solve a problem and dissolved when the problem is solved.

- Q77.** A factory produces three products shown in the table below. How much is the maximum possible profit in dollars? Here, there is an upper limit of monthly demand for each product, and up to 200 hours/month of factory time can be used for the assembly process.

	Product <i>X</i>	Product <i>Y</i>	Product <i>Z</i>
Profit per unit (dollar)	18	25	30
Time to assemble a unit (minute)	6	10	15
Maximum monthly demand (unit)	1,000	900	500

- a) 26,250 b) 30,000 c) 31,500 d) 33,000

- Q78.** When 300 pieces of product *A* in the component table below are shipped, which of the following is the net requirement of component *b*? Here, the quantity in stock for *A*, *a*, *b*, and *c* are as shown in the stock table below. In addition, there are no other items in process, on back order, or already allocated.

Component table

Item	Quantity of component		
	<i>a</i>	<i>b</i>	<i>c</i>
<i>A</i>	3	2	
<i>a</i>		1	2

Stock table

Item	Quantity in stock
<i>A</i>	100
<i>a</i>	100
<i>b</i>	300
<i>c</i>	400

- a) 200 b) 600 c) 900 d) 1,500

Q79. Which of the following is an appropriate case where ABC analysis is applied?

- a) It is applied in the case of identifying detailed sales forecasts in order to avoid running out of stock.
- b) It is applied in the case of identifying hot-selling products from the sales value and gross profit for each product.
- c) It is applied in the case of identifying market needs by conducting questionnaire surveys of the opinion leaders in each region.
- d) It is applied in the case of identifying the combination of purchased products when a customer makes a purchase.

Q80. Which of the following explains the characteristic of the break-even point?

- a) The sales at the break-even point are equal to the sum of the fixed cost and variable cost.
- b) When the fixed cost remains unchanged, the break-even point rises if the ratio of the variable cost lowers.
- c) When the fixed cost remains unchanged, the change in the ratio of the variable cost is directly proportional to the change in the break-even point.
- d) When the ratio of the variable cost remains unchanged, the break-even point rises if the fixed cost is reduced.