April 2009

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 or 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?

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

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

   [Sample Answer]

Q1	Ⓐ	●	Ⓒ	Ⓓ

   Do not open the exam booklet until instructed to do so.
   Inquiries about the exam questions will not be answered.

Q1. Which of the following arithmetic expressions is correct? Here, a number is written in radix notation; that is, a decimal subscript following the number (i.e. number_{radix}) is used to indicate the radix.

a) $1010_2 + 10_8 = 17_{10}$
c) $14_8 + 11_2 = 16_{10}$

b) $1101_2 + 4_{16} = 17_{10}$
d) $B_{16} + 10_2 = 14_{10}$

Q2. When the binary fraction 11101.110 is subtracted from the binary fraction 101101.101, what is the correct result?

a) 111.001
c) 1111.001

b) 111.111
d) 1111.111

Q3. When a certain natural number x can be represented by a $2n$-digit binary number consisting of 1 and 0 arranged alternately, i.e. 1010...10, which of the following equations holds for x?

a) $x + \dfrac{x}{2} = 2^{2n}$

b) $x + \dfrac{x}{2} = 2^{2n} - 1$

c) $x + \dfrac{x}{2} = 2^{2n+1}$

d) $x + \dfrac{x}{2} = 2^{2n+1} - 1$

Q4. There is an 8-bit numerical value, where a negative number is represented in two's complement. When this value is represented in decimal, it becomes -100. When this value is regarded as an unsigned number, which of the following is the correct value in decimal?

a) 28   b) 100   c) 156   d) 228

Q5. When multiple values are added arithmetically, it is recommended that the values be added sequentially, starting from the number whose absolute value is the smallest. Which of the following errors can be reduced by means of this method?

a) Cancellation of significant digits   b) Loss of trailing digits
c) Truncation error   d) Underflow

Q6. The figure below shows daily changes in the weather for a given district, and each value represents the probability of changes in the following day's weather.   When the weather is rainy on a given day, what is the probability that the weather is clear two days later?
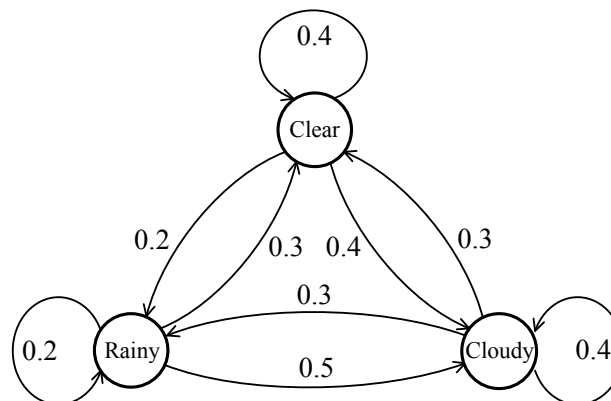
a) 0.15   b) 0.27   c) 0.3   d) 0.33

Q7. Which of the following operations does not change the lower 4 bits of an 8-bit string?

a) A logical product (i.e. AND) with a bit string 0F in hexadecimal
b) A logical sum (i.e. OR) with a bit string 0F in hexadecimal
c) A negative logical product (i.e. NAND) with a bit string 0F in hexadecimal
d) An exclusive logical sum (i.e. exclusive OR) with a bit string 0F in hexadecimal

Q8. In a certain company, there are a total of 400 employees including 100 smokers.   The number of male employees is 250, including 75 male smokers.   What is the probability that an employee selected at random is a female nonsmoker?

a) $\dfrac{3}{4}$ b) $\dfrac{3}{8}$ c) $\dfrac{5}{6}$ d) $\dfrac{5}{16}$

Q9. The decision table shown below is used to determine whether or not an order can be accepted in a sales order processing system. Which of the following logical expressions is equivalent to "Accept order"? Here, "NOT" is used for the logical negation, "AND" for the logical product, and "OR" for the logical sum.

Bad debt within 2 Years (X)	Y	Y	Y	Y	N	N	N	N
Credit excess $10,000 ($Y$)	Y	Y	N	N	Y	Y	N	N
Age of customer > 10 Years (Z)	Y	N	Y	N	Y	N	Y	N
Accept order					X		X	X
Reject order	X	X	X	X		X		

a) (NOT X) AND (NOT Y OR NOT Z)
b) (NOT X) AND (NOT Y OR Z)
c) (NOT X) AND (Y OR Z)
d) X AND (NOT Y OR NOT Z)

Q10. Which of the following sets is equivalent to the set $S - (T \cup R)$? Here, "$\cap$" stands for a product set operation, "$\cup$" for a union set operation, and "$-$" for a difference set operation.

a) $(S - T) - R$ b) $(S - T) \cup (S - R)$
c) $(S - T) \cup (T - R)$ d) $(S - T) \cap (T - R)$

Q11. The figure below shows the state transition diagram of an automaton that accepts bit strings with even numbers of 1s.   The double circle marked with "Even" represents the accepted state.   Which of the following combinations should be inserted in the blank boxes labeled *A* and *B*?
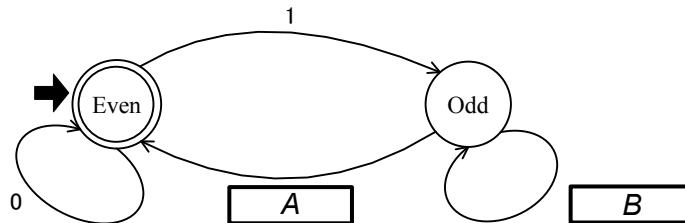
	A	*B*
a)	0	0
b)	0	1
c)	1	0
d)	1	1

Q12. Which of the following is the minimum possible depth of a binary tree with 14 nodes?

a) 0   b) 3   c) 4   d) 5

Q13. Which of the following appropriately describes a characteristic of linked lists?

a) It is not used for a homogeneous collection of elements.
b) The elements are always stored in a physically contiguous area.
c) The elements can be stored only in a dynamic way, not in a static way.
d) The elements cannot be accessed directly or randomly.

Q14. There is a two-dimensional array $A(m, n)$ with m rows and n columns, and the array in physically contiguous memory addresses is accessed such that rows are stored one after another, in row-major order. Which of the following is the correct memory address of any given element $A(i, j)$? Here, both m and n are greater than 0, and the indices i and j range from 1 to m and n respectively. In addition, x is the memory address of the element $A(1,1)$.

a) $x+n \times i+j$

b) $x+n \times (i+1)+(j+1)$

c) $x+n \times (i-1)+(j-1)$

d) $x+n \times (j-1)+(i-1)$

Q15. When a list of seven elements shown below is rearranged in ascending order, which of the following sorting algorithms is completed with the minimum number of element exchanges?

15	14	13	12	11	10	9

a) Bubble sort

b) Insertion sort

c) Selection sort

d) Shell sort

Q16. When a program (or a function) calls itself recursively, which of the following data structures is suitable for storing the data that is currently used in the program?

a) Array

b) Linked list

c) Stack

d) Tree

Q17. Which of the following logic circuits (i), (ii), and (iii) is or are equivalent to the circuit shown in Figure 1?　Here, A and B are input signals and F is an output signal.　＝⊃ stands for an OR gate, ⊐ for an AND gate, ⊐∘ for a NAND gate, and ▷∘ for a NOT gate.
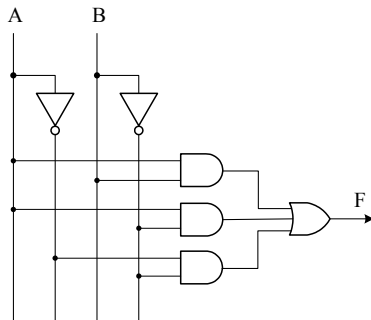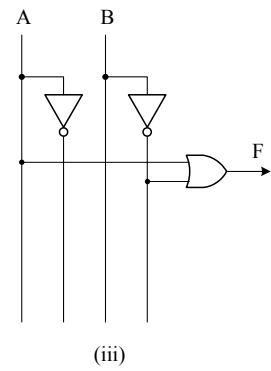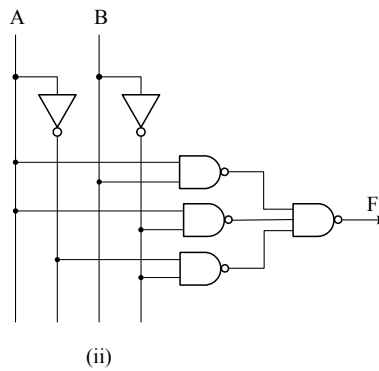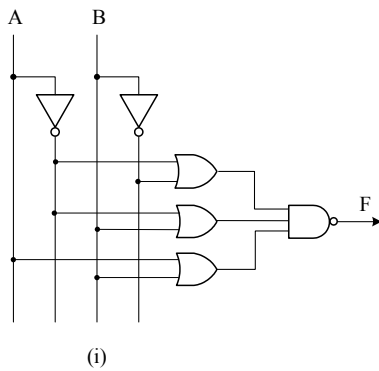

Figure 1

(i)

(ii)

(iii)

a) (i) only

b) (i) and (ii) only

c) (ii) and (iii) only

d) (i), (ii), and (iii)

Q18. When two D flip-flops are connected as shown below, which of the following timing charts represents this logic circuit?   Here, in D flip-flop, an input signal is read in and held as an output signal only when a clock signal is changed from zero (or low) to one (or high).   In other cases, no state transition occurs.

a)

b)

c)

d)
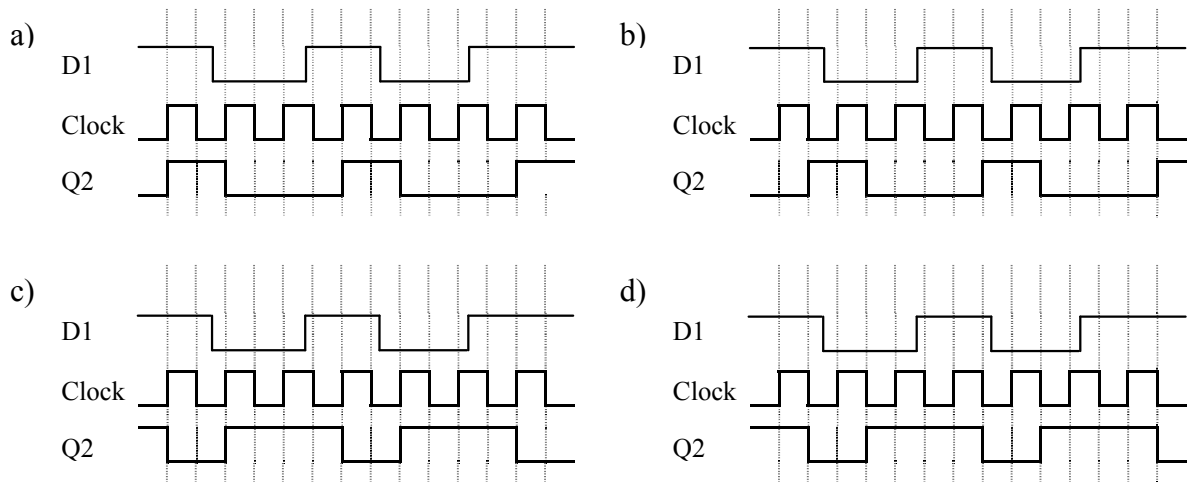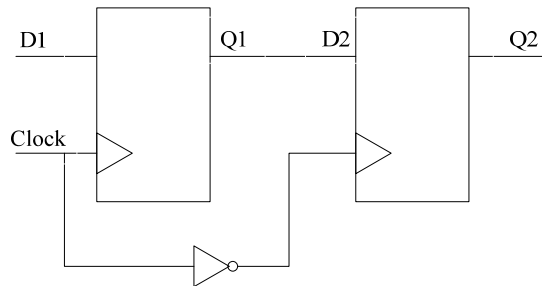
Q19. Which of the following is a high-speed memory technology that uses flip-flop circuits?

a) DRAM   b) RDRAM   c) SDRAM   d) SRAM

Q20. In a certain intrusion detection system, a detector is driven by a 4 KHz crystal clock oscillator and checks intrusion every 1,000 clock pulses.   How many times per minute does the detector check intrusion in this system?

a) 24   b) 120   c) 240   d) 250

Q21. Which of the following addressing modes is shown in the figure below?
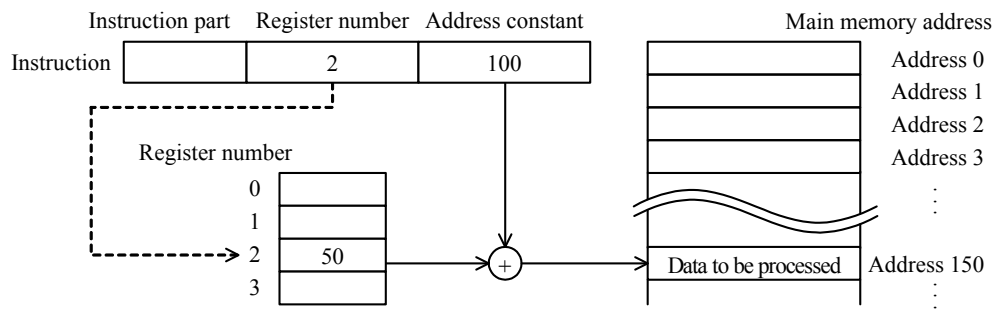
a) Direct addressing mode
b) Indexed addressing mode
c) Register indirect addressing mode
d) Relative addressing mode

Q22. A CPU that operates at 1 GHz is known to execute one machine-language instruction in an average time of 0.8 clocks. Approximately how many million instructions can be executed by this CPU in one second?

a) 1.25
b) 2.5
c) 800
d) 1250

Q23. There is a hard disk drive that has the following specifications.

[Specifications]
Capacity: 512 GBytes
Number of cylinders: 1024
Number of platters: 5 (10 surfaces)
Number of heads: 2 per platter

How many bytes can be stored in one track of this hard disk drive? Here, each track has the same capacity. 1 GByte is 10^9 bytes, and 1 Mbyte is 10^6 bytes.

a) 50 Kbytes
b) 100 Kbytes
c) 50 Mbytes
d) 100 Mbytes

Q24. From a point of view of better performance, improved fault tolerance, and enhanced data integrity, which of the following RAID configurations is commonly suitable for enterprise systems?

a) RAID 0   b) RAID 1   c) RAID 3   d) RAID 5

Q25. Which of the following is an explanation of USB?

a) A serial interface that connects devices in a tree topology via hubs
b) A serial interface that uses infrared rays to transfer data to devices such as printers
c) A parallel interface that connects devices such as hard disks and printers in a daisy-chain configuration
d) A parallel interface that connects PCs to internal devices such as CD-ROM drives and DVD drives

Q26. When an image file is transferred from a PC at hand to another PC separated by a partition without any connection cables, which of the following interfaces can be used?

a) Bluetooth   b) IEEE 1394   c) IrDA   d) Serial ATA

Q27. A color video clip is displayed in full-screen mode on a PC at 30 frames/second, with each screen comprising 300,000 pixels and 256 colors displayed at the same time. Under these conditions, which of the following is the approximate amount of data (in megabytes) that can be displayed in one minute?   Here, the data is not compressed.

a) 77   b) 270   c) 540   d) 2,300

Q28. With which of the following task scheduling methods is it highly possible for a specific task to continue to wait for the allocation of CPU resources?

a) A priority is given to each task, and the tasks are performed in order from highest to lowest. A higher priority is reassigned according to the elapsed time waiting for CPU allocation.

b) Tasks are executed in the order in which they were placed in the CPU queue. Execution is suspended after a certain period of time, and the task is moved to the end of the CPU queue.

c) The task with the shortest estimated processing time is executed first. The next task is initiated when the currently executed task is completed or suspended for some reason.

d) When a task reaches the system, it is added to the end of the executable queue, and CPU resources are always allocated to the first task on the executable queue.

Q29. When a printing operation is performed under the conditions shown below, what is the minimum number of megabytes necessary as the total capacity of the spool file?

[Conditions]

(1) The same job is executed continuously four times with multiplicity 1.

(2) It takes 20 minutes to execute the job in a standalone mode.

(3) The standalone job secures a 400-Mbyte print-spool file, where the printing data is stored.

(4) After the job is executed, the contents of the spool file are processed by the printing function of the OS.

(5) The OS deletes the spool file at the completion of the printing. Here, the time for this deletion can be ignored.

(6) There is exactly one printer, and its printing speed is 10 Mbytes per minute.

(7) Job execution and printing can be performed in parallel without one affecting the other.

a) 400   b) 800   c) 1,200   d) 1,600

Q30. Which of the following is the appropriate purpose of using semaphores?

    a) For avoiding the occurrence of slashing
    b) For implementing segmentation
    c) For implementing stacks easily
    d) For managing shared resources

Q31. The FIFO method is used as the page replacement algorithm in virtual memory. There are 3 page frames available in real memory, and a reference list of the virtual page numbers "1, 4, 2, 4, 1, 3" was allocated to real memory in this order as shown in the table below. The table, up through "assigning step 3", shows the status of the real memory pages just after each of the first three page numbers "1, 4, 2" of the reference list was allocated to real memory. Which of the following should be inserted in the bold-lined box that indicates the last status of the real memory pages just after the remaining page numbers were referenced?

Assigning step	Virtual page number referenced	Status of real memory pages		
1	1	1	–	–
2	4	1	4	–
3	2	1	4	2
4	4			
5	1			
6	3			

a)

1	4	3

b)

2	3	4

c)

3	4	2

d)

4	1	3

Q32. When a certain job is executed in a computer system, 35 percent of the total processing time of the job is used for CPU and the rest is spent waiting for I/O to complete. If a newer CPU whose speed is three times faster than the current one is installed, approximately how many times faster is the new system than the current system? Here, the system environment except for the CPU remains unchanged.

    a) 1.1   b) 1.3   c) 1.8   d) 3.0

Q33. Which of the following is the system configuration with the highest availability? Here, multiple systems connected in parallel are considered operating if at least one system is operating.

a) Four identical systems with each availability of 70% in parallel connection
b) One system with an availability of 99%
c) Three identical systems with each availability of 80% in parallel connection
d) Two identical systems with each availability of 90% in parallel connection

Q34. When machine tools are controlled by microcomputers, which of the following focuses on fail safe?

a) A hotline for emergency assistance is installed to communicate with the maintenance department of the manufacturer.
b) Components for individual functions are easy to replace, so repair time can be reduced as much as possible.
c) Even if a part of the components fails, the process continues without stopping, whenever possible.
d) The system automatically stops when an abnormal operation signal is detected.

Q35. Which of the following is an appropriate explanation of availability concerning RASIS?

a) A computer system is maintained in such a state that it can be used whenever necessary.
b) An average time required for repair and maintenance is measured during a certain period of time within the life of an individual functional unit.
c) Measures are taken to prevent a computer system from being destroyed or data from being stolen by unauthorized access.
d) Problem determination, diagnosis, and repair actions are performed effectively in a computer system.

Q36. When a corporate intranet is connected to the Internet, which of the following mechanisms works as a bridge to access the Internet, enables high-speed access by caching Web content, and then is used to ensure security?

a) DMZ
b) Firewall
c) IP masquerade (NAPT)
d) Proxy

Q37. Which of the following is an appropriate explanation of data mining?

a) A database storage method for accumulating large volumes of chronological data such as sales performance and actual manufacturing results
b) A parallel access method for searching large volumes of data at high speed
c) A technique for creating departmental databases in accordance with the purpose of use
d) A technique that uses statistical and mathematical methods to analyze large volumes of data in order to discover rules and causal relationships

Q38. Which of the following software development models is an appropriate description of the spiral model?

a) A trial product is made at an early stage to finalize a user interface and to confirm usability, performance, and functionality so that reworks resulting from specification changes can be prevented in subsequent stages.
b) It is a model in which a large-scale system is developed by enlarging its scale of functions through the repetition of the development cycles of design, implementation, and testing on each independent subsystem.
c) It is a model in which a system is divided into several independent subsystems. Each subsystem is concurrently developed and released stepwise, enabling the system operations to be confirmed from the initial release even if not all of the functions are readily available.
d) It prescribes a series of development phases in which development process flows downwards without going back to an earlier phase once it is completed, and each phase has its distinct set of deliverables used for the succeeding phase.

Q39. Which of the following tasks is performed in the external design phase of the waterfall model?

a) Code design
b) Detailed input/output design
c) Module partitioning
d) Physical file design

Q40. Which of the following is the most appropriate description concerning software reuse?

a) Incentives such as commendation systems for promotion of reusing components are initially not very effective but are more effective over time.
b) More person-hours are required for development of reusable components than for regular software development of the same scale.
c) Reusing smaller components is more effective in reducing the development person-hours per unit than reusing larger components.
d) The rate of person-hour reduction by reusing components is inversely proportional to the size of components.

Q41. A certain program module directly refers to the content of another module. It executes a single unique function, and some concept, data structure, or resource is hidden within the single module. From a standpoint of module independence, which of the following combinations appropriately shows the "module strength" and "module coupling" of this module?

	Module strength	Module coupling
a)	High	High
b)	High	Low
c)	Low	High
d)	Low	Low

Q42. The figure below shows an example of a DFD used in structured analysis. What does the symbol "◯" in the figure represent?
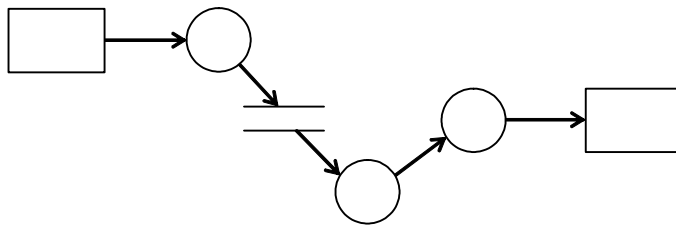
    a) Activity   b) Data flow   c) Data store   d) Process

Q43. Which of the following is an explanation of encapsulation in the object-oriented paradigm?

    a) A subclass inherits attributes from a specific base class.
    b) Attributes common to classes are extracted to create a base class.
    c) Data and its related operational procedures are hidden inside objects.
    d) Multiple objects with the same attributes are abstracted and classified.

Q44. Which of the following combinations is described in a UML class diagram?

    a) Activation, lifeline, object
    b) Attribute, operation, role name
    c) Final state, initial state, transition
    d) Link, message flow, object

Q45. Which of the following is an appropriate execution sequence in the test phase of the waterfall model?

    a) System test → Integration test → Unit test → Operational test
    b) System test → Unit test → Operational test → Integration test
    c) Unit test → Integration test → System test → Operational test
    d) Unit test → System test → Integration test → Operational test

Q46. In a narrow sense, which of the following is the most appropriate description concerning the function of a tracer that can be used for debugging purposes?

a) It can capture the contents of designated memory each time a specific instruction is executed.

b) It can dump the memory contents when an error occurs during the execution of a program.

c) It can output the contents of magnetic tape files or hard disk files.

d) It can record program flow, such as the sequence and results of execution of the program instructions.

Q47. An automated ticketing system for motorists is installed for a highway with a minimum speed limit of 60 kph (kilometers per hour) and a maximum speed limit of 100 kph. When the system is tested based on "equivalence partitioning" as a black box, which of the following is an appropriate set of speed values in kph?

a) 0, 59, 60, 100, 101, 150   b) 40, 80, 120

c) 59, 60, 100, 101   d) 60, 100

Q48. Which of the following is used for estimating the scale of system development with the function point method?

a) Number of developers   b) Number of program steps

c) Number of screens   d) Number of users

Q49. In a system environment requiring continuous availability as well as a high level of reliability, which of the following is the most appropriate term that stands for the capability to automatically switch over to a standby or redundant database, a server, or a network when the previously active one fails to operate properly?

a) Fail-over   b) Fail-proof

c) Fail-safe   d) Fail-soft

Q50. A value is calculated from a given data according to specific rules, and then a check character is determined from this value and appended to the given data. This is used to check the input data.

When the rules listed below are used, which of the following is the correct check character to be appended to the four-digit numeric data "2131"?

[Rules]
(1) Assign the coefficients 4, 3, 2, and 1 to each digit of the given data, in order from the first (leftmost).
(2) Multiply each digit by its assigned coefficient, and calculate the sum of each product.
(3) Divide the sum obtained in Step (2) by 11, and obtain the remainder.
(4) The value of the remainder obtained in Step (3) is the check character. Here, when the remainder is 10, "X" is assigned to the check character.

a) 1   b) 3   c) 5   d) 7

Q51. Which of the following devices is used for the purpose of protecting systems against momentary power loss and supplying just enough power for systems to shut down at the time of power outages?

a) AVR   b) CVCF
c) Private power generator   d) UPS

Q52. The person in charge of operating a sales management system has decided to rearrange the customer master file records in cooperation with the system users in the sales department. Which of the following is an appropriate policy for rearranging the master file?

a) Before deleting a customer record, it is necessary to first check that the customer code is not used anywhere within the sales management system and related systems.

b) Even if there are multiple records for the same customer, as long as the keys are different this is not a problem for sales data analysis, so the records can be left as is.

c) The records of customers who did not make purchases during the current month are to be physically deleted at the end of the month from the viewpoint of space efficiency.

d) The records of customers who made purchases during the current month are assumed to be correct, so these contents are not subject to checks.

Q53. When the subnet mask "255.255.255.0" is used in a "class A" network, how many host addresses can be assigned to network devices?

a) 254   b 256   c) 2^{16} d) 2^{24}

Q54. Which of the following protocols is used in mail servers on a TCP/IP network?

a) DHCP   b) SMTP   c) SNMP   d) TELNET

Q55. Which of the following protocols is supported by the transport layer of the OSI basic reference model?

a) HTTP   b) IP   c) PPP   d) TCP

Q56. Which of the following is the network topology that is used to connect one central node or hub with point-to-point links to several other nodes?

a) Bus   b) Mesh   c) Ring   d) Star

Q57. In home and office networks of Fast or Gigabit Ethernet, which of the following cables can be used as a lower cost option for connecting a client PC to the network?

a) Coax   b) Fiber-optic   c) STP   d) UTP

Q58. Which of the following is a device that interconnects LANs at the physical layer of the OSI basic reference model?

a) Bridge   b) Gateway   c) Repeater   d) Router

Q59. Which of the following is the most appropriate information used by routers in order to determine the routing paths of packets?

a) Destination IP address   b) Destination MAC address
c) Source IP address   d) Source MAC address

Q60. As shown below, there are three tables Student, Instructor, and Result.   Which of the following relational algebra operations can be used for deriving the table "Result" from the tables "Student" and "Instructor"?

Student

First Name	Last Name
Jack	Smith
Tom	Brown
Nancy	Anderson
David	Moore
Robert	Taylor
Jennifer	Jones
Barbara	Jackson

Instructor

First Name	Last Name
Susan	White
Paul	Miller
Jack	Smith
Betty	Wilson
Tom	Brown

Result

First Name	Last Name
Susan	White
Paul	Miller
Betty	Wilson

a) Instructor ÷ Student
b) Instructor ∩ Student
c) Instructor − Student
d) Instructor ∪ Student

Q61. There are three tables T1, T2, and T3 as shown below.　Which of the following tables is created as the result of executing the SQL statement specified below?

```
SELECT T3.D, SUM(T1.B)
FROM T1 NATURAL JOIN T2 NATURAL JOIN T3
GROUP BY T3.D
```

Table T1

A	B	C
1	10	1
2	20	1
3	30	2
4	40	4

Table T2

C	D
1	1
2	2
4	1
5	2

Table T3

D	E	F
1	9	1
2	8	2
5	7	3
6	6	4

a)

D	SUM(B)
1	70
2	30

b)

D	SUM(B)
1	30
2	30
4	40

c)

D	SUM(B)
1	10
2	20
5	0
6	0

d)

D	SUM(B)
1	10
1	20
2	30
4	40

Q62. When a program accesses relational database tables by means of embedded SQL statements, which of the following SQL statements is used to define the derived table?

a) CLOSE　　　　　　　　　　　b) DECLARE CURSOR
c) FETCH　　　　　　　　　　　d) OPEN

Q63. Which of the following is an appropriate description concerning the recovery process of databases?

    a) At the restart known as "cold start," the checkpoint log and update information log are used for recovering the database.

    b) At the restart known as "warm start," control goes back to the checkpoint, and the update information log is used for recovering the database.

    c) "Roll back" refers to the operation of reflecting the transactions that completed normally after the checkpoint, by checking the update information log.

    d) "Roll forward" refers to the operation of returning incomplete transactions at the occurrence of a failure to the status before update.

Q64. Which of the following is an appropriate description concerning the duties of database administrators?

    a) To allocate available development staff and resources in an optimal way for the system development using databases, and then manage them so that the system can be developed in an efficient way

    b) To conduct user interviews and create applications based on the external schema of the provided database

    c) To design and maintain databases, monitor their operations, and recover from failures

    d) To perform acceptance inspections to determine whether or not applications satisfy the functions, performance, operability, and other specifications required by users

Q65. For the purpose of finding out the number of times a Web page is accessed, an access counter is being designed.   As shown in the figure, when two browsers gain access to the Web page simultaneously, Processes 1 through 4 are executed in this order on the server.   When the access counter value is 100 before the two browsers access the Web page, what is the counter value at the completion of Process 4?
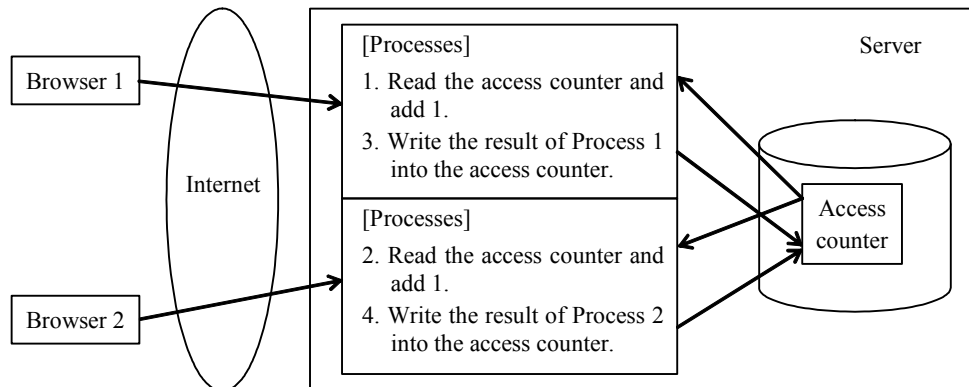
a) 100   b) 101   c) 102   d) 104

Q66. In public key cryptography, which of the following key can be used for decrypting the data that is encrypted by using the server's public key?

a) Client's private key   b) Client's public key
c) Server's private key   d) Server's public key

Q67. Which of the following is an appropriate description of phishing?

a) It is a technique for fooling users into visiting a hostile or untrusted website through spam messages and divulging personal data such as accounting numbers, passwords, and other confidential information.

b) It is an attempt to prevent legitimate users from accessing network services, by sending repetitive data packets to a targeted system from a number of systems called botnets.

c) It goes through every possible combination of numbers, letters, and symbols in order to login to the system by defeating password security.

d) It has the capability to capture and analyze data from information packets that travel over a network. That data may include user names, passwords, and proprietary information in plain text.

Q68. In an electronic transaction that employs public key cryptography, which of the following is created by the certification authority (CA), a third party independent of the parties involved in the transaction?

a) The digital signatures of the parties involved in the transaction

b) The electronic certificates for the private keys of the parties involved in the transaction

c) The electronic certificates for the public keys of the parties involved in the transaction

d) The passwords of the parties involved in the transaction

Q69. Which of the following is an appropriate description concerning Internet VPN security?

a) A virtual network is configured, so there is no way to prevent a third party that is not qualified to participate in the network from wiretapping or falsification.

b) The virtual tunnel of Internet VPN is a dedicated channel between specified LANs, so there is no function for protecting data that passes along this route from wiretapping.

c) There is no capability for identifying individual people who are qualified to participate in the network.

d) There is no risk of abusing the IP address for unauthorized access or intrusion, so there is no need to encrypt the entire packet including the IP address.

Q70. Which of the following is an appropriate description concerning risk analysis?

a) It takes too much time and cost to handle all potential risks, so the damage costs and occurrence probabilities should be estimated in advance and priority should be given in accordance with the magnitude of risks.

b) Risk analysis should not be repeated until all measures against the previously analyzed and evaluated risks are implemented.

c) The objective of risk analysis is to estimate the amount of damage associated with the occurrence of risks, so the cost of implementing countermeasures should be determined in proportion to the amount of damage.

d) The objective of risk analysis is to prevent future losses, so data accumulated from past similar projects should not be used as reference.

Q71. Which of the following is a meta-language that includes self-defining markup symbols called tags to describe the content of a Web page or file and supports bi-directional hyperlinks with high affinity to the Internet?

a) HTML   b) SGML   c) UML   d) XML

Q72. Which of the following is the purpose of emphasizing the importance of stakeholders in corporate management?

a) Improving satisfaction of interested parties such as customers, shareholders, and employees; aiming for sustainable growth

b) Keeping management executives from exercising too much authority; creating a framework for sound management

c) Preventing scandals involving managers and employees that may jeopardize the company's survival

d) Retaining business resources that serve to distinguish one's company from competitors and strengthen competitiveness

Q73. When the average cost method is used for the inventory control in the transaction record table shown below, what is the inventory value (in dollars) at the end of March?

[Transaction record]

Date (yyyy-mm-dd)	Transaction	Quantity	Unit cost ($)
2009-03-01	Beginning inventory	100	30
2009-03-06	Purchased	50	50
2009-03-10	Sold	50	
2009-03-17	Purchased	50	40
2009-03-25	Sold	100	
2009-03-31	Ending inventory	50	

a) 1,500　　　　b) 1,800　　　　c) 1,875　　　　d) 2,000

Q74. As shown below, a shop purchases and sells a certain type of product.
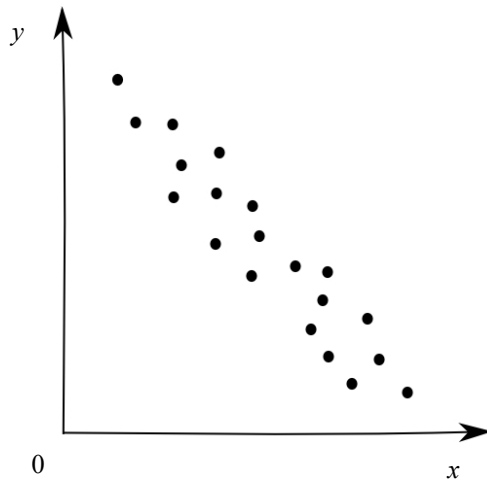
Purchasing price :　$10 per unit
Selling price　　 :　$15 per unit
Fixed cost　　　 :　$1,000

How many units are sold at a "break even" point, where there is neither a profit nor a loss?
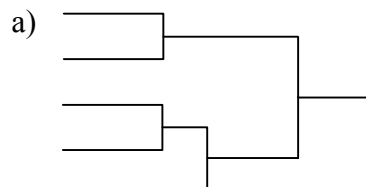
a) 100　　　　b) 150　　　　c) 200　　　　d) 250

Q75. Which of the following is the appropriate relationship between two variables x and y represented by the scatter diagram?

a) Negative correlation
b) No correlation
c) Positive correlation
d) Weak correlation

Q76. Which of the following is the diagram showing results of cluster analysis?

a)

b)

c)

d)
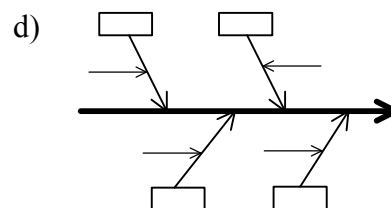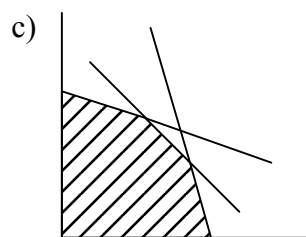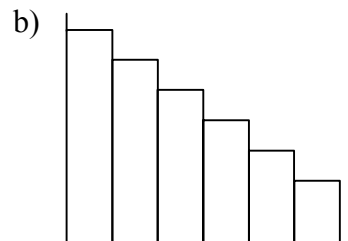
Q77. When ABC analysis is done on the products shown in the table below, which of the following is a set of the product numbers that should be handled as management items of Group A?

Product Number	Annual Sales	Unit Price	Annual Revenue
1	110	2	220
2	60	40	2,400
3	10	4	40
4	130	1	130
5	50	12	600
6	1	25	25
7	10	2	20
8	150	2	300
9	20	2	40
10	50	1	50
Total	591		3,825

a) 1 and 2   b 2 and 5   c) 2 and 6   d) 4 and 8

Q78. The figure below is the OC curve (Operating Characteristic curve) that shows the result of a sampling inspection of a certain product lot.　 Which of the following appropriately describes what this figure indicates?
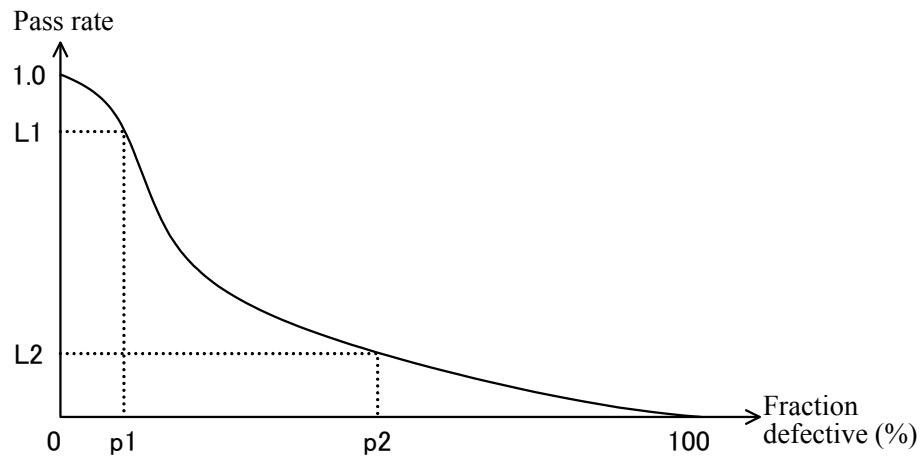
a) The probability that a lot with a fraction defective greater than p1% passes the inspection is at least L1.

b) The probability that a lot with a fraction defective greater than p2% passes the inspection is at most L2.

c) The probability that a lot with a fraction defective less than p1% fails the inspection is at least "1.0 − L1".

d) The probability that a lot with a fraction defective less than p2% fails the inspection is at most L2.

Q79. Which of the following is the explanation of a control chart?

a) Collected data is classified into a few intervals, the number of data for each interval is drawn as a bar graph, and then the variation in quality is observed.

b) Data is classified into a few items, the items are drawn as a bar graph from the largest to the smallest along the horizontal axis, the cumulative values are drawn as a line graph, and then major problems are grasped.

c) The relationship between cause and effect is systematically sorted out and shaped like a fish skeleton, clarifying which causes are associated with which results.

d) Variation of data occurring in time sequence is expressed by a line graph; it is used to find an abnormal behavior, with an upper limit and a lower limit specified.

Q80. Which of the following is a characteristic of IC tags (RFIDs)?

a) IC tags are dirt-resistant, and the information recorded on them can be read even from outside the package.

b) IC tags are embedded in plastic cards, and special-purpose readers are used to insert IC tags and to read them.

c) IC tags manage large amounts of information, so external memory devices are used for information storage.

d) IC tags use GPS to indicate positional information.