

- Q1.** Which of the following numbers expresses the decimal number 0.6875 as a binary number?
- a) 0.1001 b) 0.1011 c) 0.1101 d) 0.1111
- Q2.** There is a register which stores numbers as binary numbers. After inputting a positive integer x into this register, operations “to shift the register value 2 bits to the left and to add x to the value” will be performed. How many times is the resulting register value larger than x ? Here, the number will not overflow when shifted.
- a) 3 b) 4 c) 5 d) 6
- Q3.** Which of the following expressions obtains $-n$ for an 8-digit binary number n when a negative number is expressed as the two’s complement? Here, $+$ indicates addition, while OR and XOR indicate, respectively, the logical sum and exclusive logical sum of the bits.
- a) $(n \text{ OR } 10000000) + 00000001$ b) $(n \text{ OR } 11111110) + 11111111$
c) $(n \text{ XOR } 10000000) + 11111111$ d) $(n \text{ XOR } 11111111) + 00000001$
- Q4.** When a floating-point addition or subtraction is performed on a number whose absolute value is large and a number whose absolute value is small, which of the following does not partially or entirely reflect the significant digits of the number whose absolute value is small?
- a) Cancellation error b) Digit cancellation
c) Information loss d) Absolute error

Q5. The function $f(x)$ has real arguments and returned values. Consider the procedure consisting of steps ① ~ ⑤ as shown below using this function. After starting execution and repeating the procedure a sufficient number of times, y in step ③ stops changing. Which of the following expressions holds at this point?

- ① $x \leftarrow a$
- ② $y \leftarrow f(x)$
- ③ Display value of y
- ④ $x \leftarrow y$
- ⑤ Return to ②

- a) $f(a)=y$ b) $f(y)=0$ c) $f(y)=a$ d) $f(y)=y$

Q6. The following table indicates the weather changes at a particular location. For example, the day following a clear day, there is a 40% chance that the weather will be clear, a 40% chance that it will be cloudy and a 20% chance that it will be rainy. Assuming that the change in weather is a Markov process, what is the probability that the weather two days after it rains will be clear?

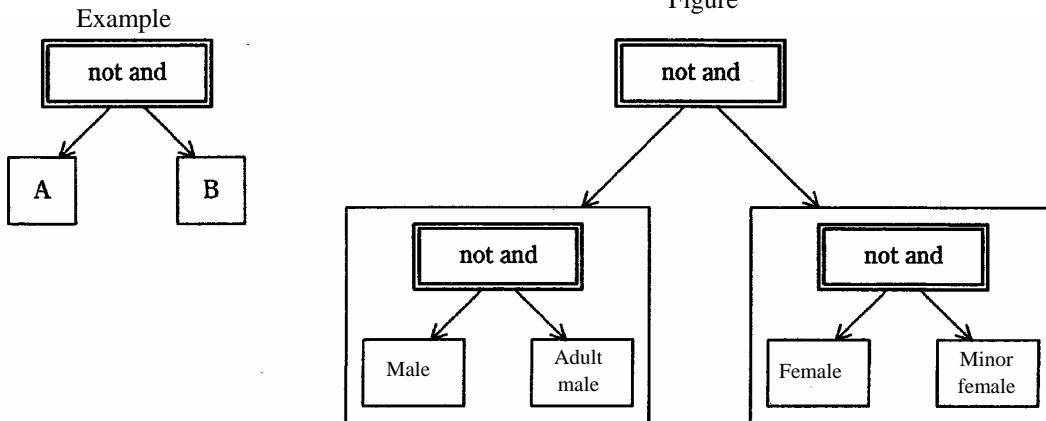
	Unit %		
	Clear next day	Cloudy next day	Rainy next day
Clear	40	40	20
Cloudy	30	40	30
Rainy	30	50	20

- a) 15 b) 27 c) 30 d) 33

Q7. Which of the following is equivalent to the logical expression $A \vee (\bar{A} \wedge B)$? Here, \wedge is the logical product, \vee the logical sum and \bar{X} the negation of X .

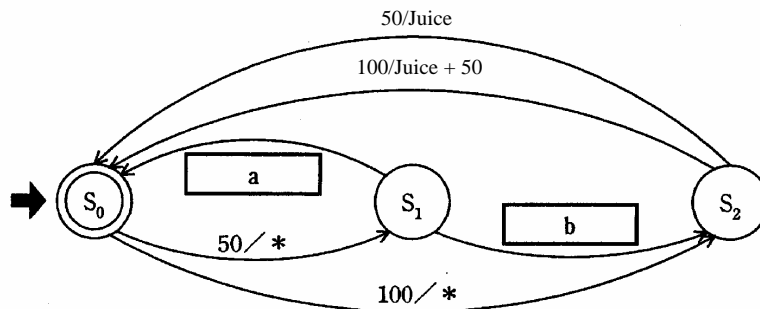
- a) $A \wedge B$ b) $A \vee B$ c) $A \wedge \bar{B}$ d) $A \vee \bar{B}$

- Q8.** When the logical expression $\overline{A \wedge B}$ is written as shown in the example below, which of the following is represented by the expression shown in the figure?



- a) Female
 b) Adult male or minor female
 c) Male
 d) Minor male or adult female
- Q9.** There is an 8-bit register. The values of the bits in the register are d_0, d_1, \dots, d_7 and the value of the parity bit is p . Which of the following expressions always holds an odd parity? Here, a \oplus represents an exclusive OR operation.
- a) $0 \oplus d_0 \oplus d_1 \oplus \dots \oplus d_7 = p$
 b) $d_0 \oplus d_1 \oplus \dots \oplus d_7 = p$
 c) $d_0 \oplus d_1 \oplus \dots \oplus d_7 \oplus p = 0$
 d) $d_0 \oplus d_1 \oplus \dots \oplus d_7 \oplus p = 1$

Q10. The figure below expresses the state transition of a vending machine that sells drinks for ¥150. A state is expressed as “ S_i ” and the transition condition is expressed as “ $X/Y + Z$ ”. If “ S_0 ” is taken as the initial state, which of the following combinations should be used to fill in a and b in the figure? Here, X is the input, the coins which can be used are ¥50 and ¥100 coins only, and only one coin can be inserted into the machine at a time. Y is the output and an “*” means that nothing is outputted. Also, Z is the incidental condition “change” derived from X and Y, which is not indicated if there is no change. For example, “100/Juice+50” means that, when a ¥100 coin is inserted into the machine, juice comes out and the change is ¥50.



	a	b
a)	100/*	50/*
b)	100/50	50/ Juice
c)	100/ Juice	50/*
d)	100/ Juice	50/ Juice

Q11. When the syntax for numerical values is defined as follows, which of the following items is treated as a <numerical value>?

< Numerical value > ::= < Numeral string >
 | < Numeral string > E < Numeral string > | < Numeral string > E < Sign > < Numeral string >
 < Numeral string > ::= < Numeral > | < Numeral string > < Numeral >
 < Numeral > ::= 0|1|2|3|4|5|6|7|8|9
 < Sign > ::= +|-

- a) -12 b) 12E-10 c) +12E-10 d) +12E10

- Q14.** A key is composed of 3 alphabetic characters. When the hash value h is decided with the following expression, which of the following collides with the key “SEP”? Here, “ $a \bmod b$ ” represents the remainder when a is divided by b .

$$h = (\text{Sum of positions of alphabetic characters in the key}) \bmod 27$$

Alphabetic character	Position
A	1
B	2
C	3
D	4
E	5
F	6
G	7
H	8
I	9
J	10
K	11
L	12
M	13

Alphabetic character	Position
N	14
O	15
P	16
Q	17
R	18
S	19
T	20
U	21
V	22
W	23
X	24
Y	25
Z	26

- a) APR b) FEB c) JAN d) NOV

Q15. When a program whose functions are as shown in the flowchart in Figure 1 was executed when the contents of array *A* were as given in Figure 2, array *B*, whose contents are shown in Figure 3, was produced. Which operation should be filled in *a* of Figure 1? Here, the elements of arrays *A* and *B* are represented by $A(i, j)$ and $B(i, j)$, respectively.

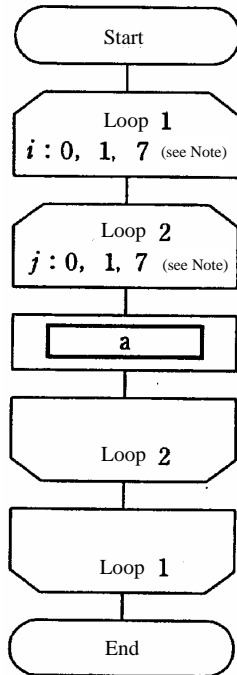


Fig. 1 Flowchart

j →

	0	1	2	3	4	5	6	7
↓ <i>i</i>	0	*	*	*	*	*	*	*
	1	*						
	2	*						
	3	*	*	*	*			
	4	*						
	5	*						
	6	*						
	7	*						

Fig. 2 Contents of Array A

j →

	0	1	2	3	4	5	6	7
↓ <i>i</i>	0							
	1	*	*	*	*	*	*	*
	2				*			*
	3				*			*
	4				*			*
	5							*
	6							*
	7							

Fig. 3 Contents of Array B After Execution

Note: The repetition specification for a loop is as follows: variable name: initial value, increment, termination value.

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

Q16. What is a characteristic of DRAM in comparison to SRAM?

- a) It can achieve higher speed access than SRAM.
- b) A refresh operation is unnecessary to hold data.
- c) Because internal configuration is complicated, the unit cost per bit is high.
- d) Because the area per bit can be kept small, it is suited for high density integration.

Q17. Which of the following programming methods effectively utilizes the pipeline processing of a CPU?

- a) Using as many subroutines as possible.
- b) Using as many case statements as possible. Whether these statements are executed or not depends on conditions.
- c) Using as few branch instructions as possible.
- d) Using as few memory access instructions as possible.

Q18. Which of the following correctly describes the features of RISC in comparison to CISC?

	Instruction length	Hardware control	Operation target
a)	Fixed	Mainly macro code control	Memory, registers
b)	Fixed	Wired logic control	Registers
c)	Variable	Mainly macro code control	Registers
d)	Variable	Wired logic control	Memory, registers

Q19. The following table contains a mixture of a particular computer's instructions. What is roughly the processing performance of this computer in MIPS?

Instruction type	Execution speed (ms)	Occurrence rate (%)
Integer operation instruction	1.0	50
Move instruction	5.0	30
Branch instruction	5.0	20

- a) 0.1
- b) 0.3
- c) 1.1
- d) 3.0

Q20. Which of the following statements correctly describes the clock frequency of a personal computer CPU?

- a) Clock frequency controls the instruction execution timing of the CPU, therefore the higher the clock frequency, the faster the instruction execution speed of the PC.
- b) Clock frequency affects the rotational speed of magnetic disks, therefore the higher the clock frequency, the greater the number of revolutions and thus the faster the transfer speed of the magnetic disk.
- c) Clock frequency also controls communication speed, therefore the higher the clock frequency, the faster the communication speed of the LAN.
- d) Clock frequency is the reference for the PC's internal clock, therefore when clock frequency is doubled, the interrupt interval is reduced by half and real-time processing speed is faster.

Q21. In which of the following cases does a processor generate an interrupt?

- a) When switching the memory bank by interleaving is completed.
- b) When a hit miss for a cache memory occurs.
- c) When an I/O instruction is executed.
- d) When an overflow occurs as a result of the execution of a floating decimal operation.

Q22. Which of the following is the correct ascending order of the effective memory access times in ns?

	Cache memory			Main memory
	Exists?	Access time (ns)	Hit rate (%)	Access time (ns)
A	No	–	–	15
B	No	–	–	30
C	Yes	20	60	70
D	Yes	10	90	80

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

- Q23.** Two software packages must be stored on a magnetic disk in a PC. What is the minimum space in Mbytes needed on the magnetic disk to store and to execute the software? The space needed on the magnetic disk to store each of the software packages is indicated in the following table. Software package 1 and software package 2 are never used at the same time.

	Unit: Mbyte		
	OS	Software 1	Software 2
Space required to store software package	80	60	120
Space required as temporary work area for execution	40	40	50

- a) 260 b) 310 c) 350 d) 390
- Q24.** The best way to store a file on a magnetic disk is to store it in a continuous area. Why is that so?
- a) It eliminates unrecorded areas of the magnetic disk and the entire disk can be used.
- b) It reduces the area needed to store file management information, and therefore the space available to the user increases by that much.
- c) Less reading errors occur compared to the case where the file is recorded in partitioned areas.
- d) The magnetic head moves less when reading continuous data, therefore read time is shorter.
- Q25.** There is a system which manages the files area in units of blocks, each containing eight 500-byte sectors. How many sectors in total would be assigned to save two files, one consisting of 2,000 bytes and the other of 9,000 bytes? Assume that the sectors occupied by management information, such as directories, can be ignored.
- a) 22 b) 26 c) 28 d) 32

Q26. Which of the following correctly defines RAID?

- a) It is a technology that automatically backs up data by combining at least 2 magnetic disk devices into one.
- b) It is a technology for virtually creating a high speed-access magnetic disk using a semiconductor memory.
- c) It is a technology that increases the reliability and speed of memory devices by using multiple magnetic disk devices.
- d) It is a technology for creating magnetic disk devices with random access capabilities.

Q27. Which of the following media records data on a magnetized disk by irradiating the disk surface film with a laser beam, so as to heat it and subsequently change the direction of the magnetism?

- a) CD-R
- b) DVD
- c) LD
- d) MO

Q28. Which of the following interface standards allows, in a tree structure, the connection of multiple peripheral devices through a hub?

- a) IDE
- b) RS-232C
- c) SCSI
- d) USB

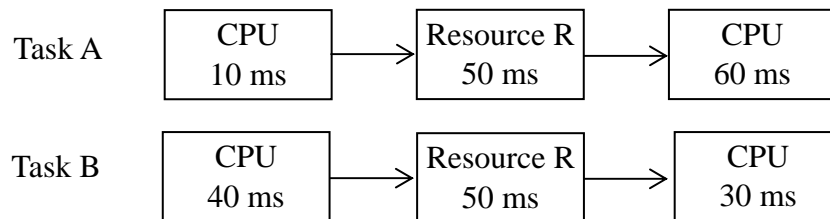
Q29. There is a digital camera which captures images of 24-bit color information at a resolution of H1,600 x V1,200 dots. If an 8-Mbyte recording memory is used with this camera, how many images can it record? Assume that image compression is not used.

- a) 1
- b) 4
- c) 11
- d) 15

Q30. In which of the following situations does thrashing occur in a paging-type virtual storage system?

	CPU usage of application	Page transfer volume between main and auxiliary memories
a)	High	Large
b)	High	Small
c)	Low	Large
d)	Low	Small

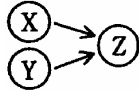
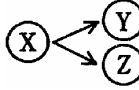
Q31. A certain system consists of 2 CPUs. The CPU that is not being used is assigned to a task whose execution is requested. On this system, two tasks, A and B, are executed. These tasks both use a common resource R exclusively. The CPU usage of tasks A and B, the usage of resource R and the execution sequence are shown in the figure below. If both tasks are started at the same time, how long in ms will the completion of processing take for the two tasks?



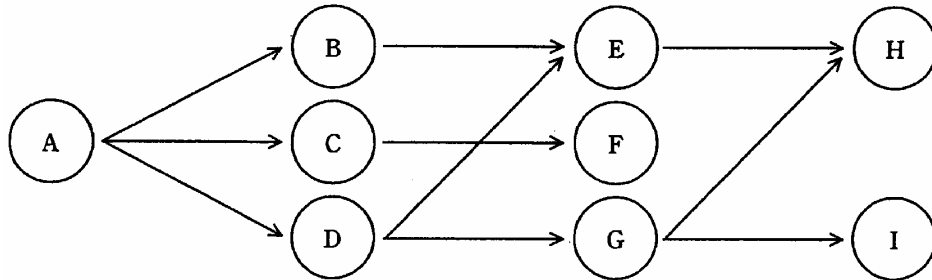
- a) 120 b) 140 c) 150 d) 200

Q32. If a job network is executed under the following conditions, what is the shortest amount of time in hours required to complete processing?

[Conditions]

- (1) Job execution multiplicity is 2.
- (2) Processing time per job is 1 hour and other jobs do not affect this.
- (3) Each job is scheduled in order of activation.
- (4)  indicates that Z starts when both X and Y end.
- (5)  indicates that Y and Z start in this sequence when X ends.
- (6) Assume that OS overhead can be ignored.

[Job network]



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

Q33. There is a system that outputs to the printer using a spooling function. In order to satisfy the following conditions, how big must the spooling file be in Mbytes?

[Conditions]

- (1) There are 2 Mbytes of print data per job.
- (2) Data is compressed 50% in the spooling file.
- (3) 100 jobs are processed per hour and processing variations can be ignored.
- (4) A maximum of 5 hours of print data can be spooled.

- a) 100 b) 250 c) 500 d) 1,000

- Q34.** From the standpoint of an application, which of the following specifies OS overhead?
- a) Execution time of the application interrupt processing
 - b) Execution time of the task scheduler
 - c) Execution time of other applications
 - d) Execution time of re-entrant programs
- Q35.** Which of the following is a correct statement concerning a direct organization file?
- a) It is suitable for both sequential access and random access.
 - b) A synonym record may exist.
 - c) Multiple keys can be assigned to the same record.
 - d) Records cannot be inserted.
- Q36.** Which of the following is a correct statement concerning a client-server system?
- a) The client and the server must use OS's of the same kind.
 - b) The server sends data processing requests and the client processes those requests.
 - c) A server can be equipped with a client function that enables it to request processing of another server if necessary.
 - d) The server functions must be allocated to different computers, such as a file server and print server.
- Q37.** Which of the following is a technique for building a highly reliable system from multiple computers that prevents the system from shutting down when trouble occurs, by transferring processing to an unaffected computer if a failure occurs somewhere in the system?
- a) Clustering
 - b) Cold standby
 - c) Hot swap
 - d) Mirroring

- Q38.** Which of the following indicators used in system performance evaluations is the one most frequently used to indicate the contention state of the main memory?
- a) Execution latency
 - b) Transaction response time
 - c) Paging frequency
 - d) Memory usage
- Q39.** Assume that the utilization ratio of a computer system with an MTBF of 1,500 hours and an MTTR of 500 hours is to be increased by a factor of 1.25. What must the MTTR be?
- a) 100
 - b) 125
 - c) 250
 - d) 375
- Q40.** Which of the following is an accurate statement concerning an ADSL?
- a) It enables high-speed data transmission of differing incoming and outgoing speeds, using the existing telephone line (twisted pair).
 - b) Voice and data are separated by a terminal adapter (TA), so they can share the same line.
 - c) Voice and data are sent by time-divided multiplexing.
 - d) Optical fiber cable is laid down to the home to enable various communication services such as telephony, ISDN, and data communications.
- Q41.** There is a program module that can simultaneously execute multiple task requests in parallel. What is this quality called?
- a) Reusable
 - b) Re-entrant
 - c) Statically re-locatable
 - d) Dynamically re-locatable
- Q42.** Though originally the term referred to a small program, nowadays it indicates a compiled object code that is stored in a server and, whenever requested by a client, is sent to the client and executed. What is the term in question?
- a) Applet
 - b) Servlet
 - c) Script
 - d) Thread

- Q43.** Which of the following statements describes a dynamic linking function?
- a) When the program is executed, it loads modules from the shared library and system library.
 - b) When the program is executed, it loads the object program into the appropriate addresses.
 - c) When the program is executed, it converts the logical address of the loaded page into a physical address.
 - d) Before the program is executed, it link-edits multiple object programs.
- Q44.** Which of the following correctly defines XML?
- a) It is an object-oriented language based on C++.
 - b) It is an interpreter language for text processing and a standard language for CGI (Common Gateway Interface) programs that run on Web servers.
 - c) It is a standard page description language for desktop publishing.
 - d) It is a language that uses tags to express data structures and meanings.
- Q45.** Which of the following is categorized as an upstream CASE tool?
- a) System design support tools
 - b) Test data generation tools
 - c) Automatic program generation tools
 - d) Project management tools
- Q46.** Which of the following statements correctly describes a waterfall model feature guaranteeing consistency in system development?
- a) As a rule, it is not allowed to go backwards across development processes.
 - b) System development is divided up into multiple processes to be managed.
 - c) It is absolutely necessary to create a project organization.
 - d) Development work in the next process is based on the results passed down from the preceding process.

Q47. Which of the following statements correctly defines a DFD in structured analysis?

- a) It is a diagram that indicates a possible system status as a circle and the transition from one status to another with an arrow.
- b) It is a diagram that indicates processing flow, data to be processed, devices used, etc.
- c) It is a diagram that divides required functions into several units and indicates the data flows between those units.
- d) It is a diagram that indicates records as rectangular boxes and the relations between records with arrows.

Q48. Which system is best designed using state transition diagrams?

- a). An inventory system that tabulates inventory assets at the end of the month or on closing dates.
- b) A system that monitors the operating status of system assets and outputs a report.
- c) A system that computes water rates from water meter data.
- d) A system that maintains an optimal greenhouse environment on the bases of information gathered by sensors installed in the greenhouse.

Q49. Which of the following is an accurate statement in regard to object-orientation?

- a) Object-orientation is a technique that is better applied to simple system development than to complicated system development.
- b) An object is the encapsulation of data and procedures.
- c) Object-orientation is an analytical design method that focuses on function. Functions are expressed as mathematical functions and procedures.
- d) Attributes and functions cannot be inherited. Each object is fixed.

- Q50.** The manual for a certain programming language contained the following text. Which of the statements below accurately describes a feature of the “good program” mentioned in the text?

When calling a function, this programming language uses a stack to hold arguments. If the data received with arguments is moved to a common area for referencing by many functions, stack usage can be reduced, but this defeats the purpose of a “good program”.

- a) The amount of memory used for execution is kept below a certain level.
 - b) Execution speed is optimized.
 - c) Even if part of the program is changed, the rest of the program is unaffected.
 - d) The program has fewer lines of code and is easy to understand.
- Q51.** A black box test is a type of testing technique used in software development. Which of the following statements accurately describes a black box test?
- a) A black box test analyzes the source program and tests program control flow and the flow of data such as variables. It is mainly performed by third parties and not by the program developer.
 - b) A black box test tests whether or not the program functions as the designer intended. It is mainly performed by third parties and not by the program developer.
 - c) The objective of a black box test is to execute all of the instructions in the program at least once. It is mainly performed by the program developer him/herself.
 - d) A black box test is based on the internal specifications that describe the internal structure and logic of the program. It is mainly performed by the program developer him/herself.

Q52. What is the objective of a design review?

- a) To review and modify a development schedule so as to make the schedule feasible.
- b) To discover defects or mistakes in specifications at an early stage of development and minimize the amount of backtracking.
- c) To improve development efficiency by preventing mistakes from being inserted in the design process and by simplifying tests.
- d) To improve the accuracy of development estimates by improving design quality.

Q53. What are the three control structures for creating programs in structured programming?

- a) Repetition, recursion and sequence b) Repetition, recursion and selection
- c) Repetition, sequence and selection d) Recursion, sequence and selection

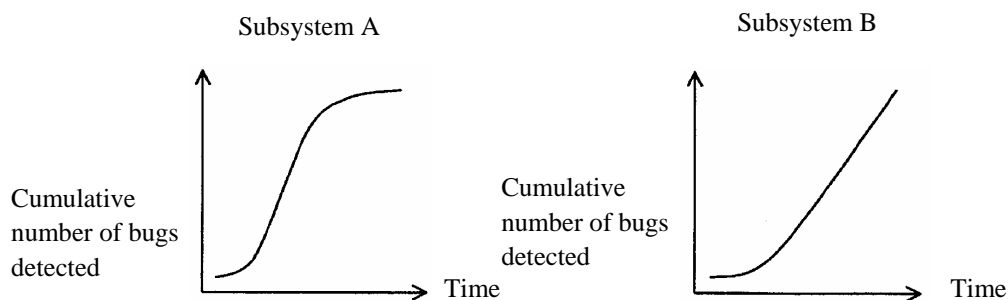
Q54. Which of the following tests is performed in the system test process?

- a) Load test
- b) Interface test between modules
- c) Operation test based on module specifications
- d) Regression test

Q55. A system is being developed with subsystems A and B. At present, testing for the two subsystems has been completed. Data for tests performed up to this point is given in the table below. A standard test for this system has 10 items per k LOC (lines of code).

Subsystem name	Development scale	Number of test items	Number of unresolved bugs
A	30 k LOC	300	0
B	20 k LOC	200	0

The status of bug detection up to this point is plotted in the graphs below.



Assuming the same difficulty factor for both subsystems A and B, which of the following statements is an accurate evaluation of the current situation?

- The number of detected bugs has converged more in subsystem A than in subsystem B, therefore subsystem A can be judged to be of higher quality.
- Neither of the two subsystems is of stable quality, therefore additional testing is required.
- Roughly the same number of bugs were detected in both subsystems, therefore quality can be judged to be about the same.
- The number of unresolved bugs is 0 for each of the subsystems, therefore sufficient testing has been done.

Q56. Which of the following statements correctly describes the function point method?

- a) It is a method for estimating the workload and cost involved in system development, by taking into consideration development scale, difficulty factor and factors related to development peculiarities.
- b) It is a method for estimating the development scale and workload involved in system development, by dividing the system development process into detailed work, estimating each individual work in detail and totaling these estimates.
- c) It is a method that computes the amount of system functions from information in system external specifications and then estimates system development scale based on that amount.
- d) It is a method for estimating development scale and the workload for each segment of the system development process, in order to improve the accuracy of estimates.

Q57. Which of the following methods recovers the most recent state of a database following a disk failure, by first restoring data from a backup tape and then applying a journal?

- a) Checkpoint restarting
- b) Rebooting
- c) Rollback
- d) Roll-forward

Q58. When system development and operation are organized as separate departments, which of the following procedures efficiently promotes transfer of a system from development to operation?

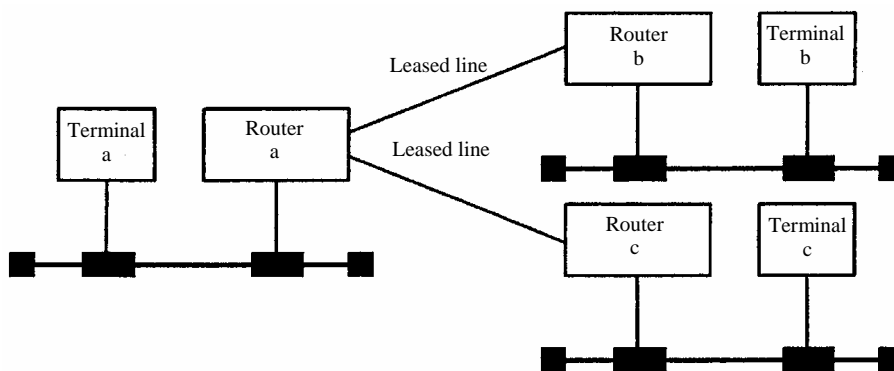
- a) After completing operation tests, the development department explains system specifications and operation method to the operations department.
- b) The operations department performs operation tests without the participation or support of the development department.
- c) The development department performs operation tests and prepares an operation manual that it provides to the operations department.
- d) The operations department constructively participates in system development to provide support from an operability perspective.

- Q59.** Which of the following correctly describes TCO?
- a) Development and hardware cost for an operations system installed in the own company
 - b) Cost of everything from hardware and software installation to operation and management
 - c) Cost up to installation and operation of hardware and software
 - d) Hardware cost and cost required for technical support, such as a help desk and user education
- Q60.** Which of the following development methods analyzes an existing program or file and creates specifications that serve as reference for creating a program or file with similar functions?
- a) Concurrent engineering
 - b) Re-engineering
 - c) Reverse engineering
 - d) Reuse technology
- Q61.** Which of the following layers of an OSI basic reference model is comparable to an HDLC procedure?
- a) Data link layer
 - b) Transport layer
 - c) Network layer
 - d) Physical layer
- Q62.** How many bits are there in an IPv4 IP address?
- a) 8
 - b) 16
 - c) 32
 - d) 64
- Q63.** What protocol dynamically assigns IP addresses in a TCP/IP network?
- a) ARP
 - b) DHCP
 - c) RIP
 - d) SMTP

Q64. In a CSMA/CD LAN, which of the following is used in the data link layer to identify the sender and destination when sending and receiving frames?

- a) Host ID in an IP address
- b) MAC Address
- c) Subnet mask
- d) Port No.

Q65. Three IP routers are connected by leased lines as shown in the figure below. Which of the following statements correctly describes the operation of router a in relaying a TCP/IP packet from terminal a to terminal b?



- a) Router a relays all packets to both router b and router c.
- b) Router a relays packets to router b only according to the relay router specified in the packet.
- c) Router a relays packets to router b only based on the destination IP address in the packet.
- d) Router a learns the location of terminal b from the MAC address of the destination in the packet and relays the packets to router b only.

Q66. What device connects public telephone lines and internal lines, as well as internal lines amongst themselves?

- a) DSU
- b) PBX
- c) TDM
- d) Gateway

- Q67.** Which of the following statements correctly describes data normalization?
- a) It facilitates application program creation.
 - b) It prevents data multiplicity, thereby making maintenance and management easier.
 - c) It increases the efficiency of database searches.
 - d) It reduces the amount of required memory space by simplifying database structures.
- Q68.** Which of the following is an accurate statement in regard to an E-R diagram?
- a) It is created as a pretext to implementing a relational database.
 - b) It clarifies the operational relations between individual processes and data. As a result, the relations between introduced entities express the individual operational processes.
 - c) It creates an abstraction of information handled in operations, so as to express entities and the relations between them.
 - d) It expresses the entire process from data creation to destruction.

Q69. Which of the SQL statements below acquires Table B from Table A?

Table A

Employee ID	Name	Department code	Salary(\$)
10010	Lucy Brown	101	2,000
10020	Mike Gordon	201	3,000
10030	William Smith	101	2,500
10040	John Benton	102	3,500
10050	Tom Cage	102	3,000
10060	Mary Carpenter	201	2,500

Table B

Department code	Employee ID	Name
101	10010	Lucy Brown
101	10030	William Smith
102	10040	John Benton
102	10050	Tom Cage
201	10020	Mike Gordon
201	10060	Mary Carpenter

- a) `SELECT department_code, employee_ID, name FROM A
GROUP BY employee_ID`
- b) `SELECT department_code, employee_ID, name FROM A
GROUP BY department_code`
- c) `SELECT department_code, employee_ID, name FROM A
ORDER BY employee_ID, department_code`
- d) `SELECT department_code, employee_ID, name FROM A
ORDER BY department_code, employee_ID`

Q70. What kind of processing is carried out periodically to prevent database access efficiency from deteriorating?

- a) Re-creating
- b) Re-organizing
- c) Database dumping
- d) Backup

- Q71.** There are two primary objectives in using a digital signature. One is to enable the recipient of a message to check who the sender is. What is the other objective?
- a) To enable the recipient of the message to check the ID of the sender.
 - b) To enable the recipient to confirm whether or not it is safe to return a security key.
 - c) To check whether or not the message was modified after it was signed.
 - d) To check that the message in a transmission was not wrongly decoded.
- Q72.** Which of the following is an appropriate basic policy measure for a company's information security policy?
- a) An information security policy is common to each industry. There is little need for each individual company to adopt its own policy.
 - b) The systems administrator develops the information security policy and must ensure that no one other than him/herself knows it.
 - c) The company's view of and position on information security should be written out.
 - d) The settings of a firewall must be decided and documented.
- Q73.** Which of the following is a correct statement in regard to ISO 9001:2000 certification?
- a) Once certified, the qualification is semi-permanently valid.
 - b) There is one certifying organization per country.
 - c) It is a certification for the manufacturing industry and does not apply to the service industry.
 - d) It certifies organizations whose quality management systems meet international standards.

Q74. Which of the following statements correctly describes the role of the CIO?

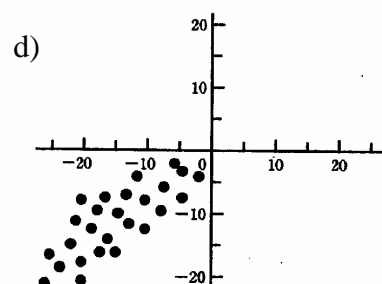
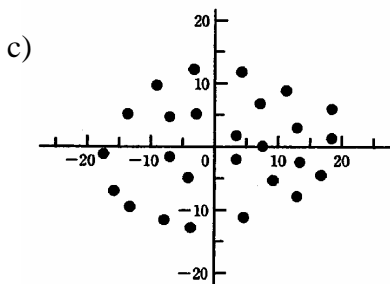
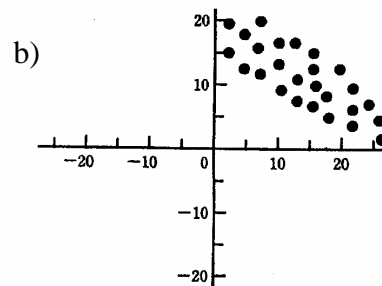
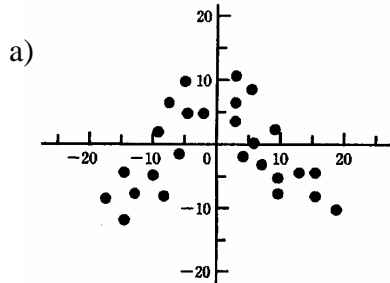
- a) In drafting an IT strategy, CIO the adopts a plan to optimize the effects of cross-company investment in information assets in accordance with the company’s business strategy.
- b) The CIO proposes specific improvements to a company’s information system aimed at maximizing system performance, by understanding the status of system development and operation.
- c) The CIO gives advice to the information systems department after examining whether or not the information system is functioning soundly in response to company activities.
- d) To help ensure optimum operational efficiency of a company’s information system, the CIO receives reports from the information systems department on inquiries made concerning system operation and related problems, then issues specific instructions on how to proceed.

Q75. Plans A and B shown in the table below have been put forth to make a product that is to be sold at a retail price of \$1,200. The plan that is more advantageous in terms of sales quantity will be selected. What is the monthly sales quantity at which the advantage between plan A and plan B reverses?

	Monthly fixed cost	Fluctuating unit cost
Plan A	\$100,000	\$700/unit
Plan B	\$200,000	\$500/unit

- a) 400 b) 500 c) 600 d) 700

Q76. A distribution chart was prepared to look at the correlations in data. Which of the following charts indicates a “negative correlation”?



Q77. Company X is looking at its production strategies. It compiled into an economic outlook table as shown below the estimated profits for the various strategies. Which strategy will bring about the highest profit if the “good”, “flat”, and “bad” ratios of the economic outlook are 30%, 60%, and 10%, respectively?

Unit: \$10,000

Economic outlook \ Strategy	Economic outlook		
	Good	Flat	Bad
A1	800	300	200
A2	800	400	100
A3	700	300	300
A4	700	400	200

a) A1

b) A2

c) A3

d) A4

- Q78.** Which of the following services allows companies to connect their computers and PCs to the computer center of a bank and use the online services offered by the bank?
- a) Firm banking
 - b) Home banking
 - c) Wholesale banking
 - d) Retail banking
- Q79.** Which of the following statements concerning program copyrights is correct?
- a) The copyright protection period of a program created and made public by an individual is 50 years from the date of its creation.
 - b) Even if a copy of a program is received legally, it cannot be copied further without the permission of the copyright holder.
 - c) A program copyrighted by a company is still considered to be under copyright even if it is not made public.
 - d) A copyright on a program is not established unless the program is registered with a designated registration organization.
- Q80.** Which of the following statements accurately describes the contracting of dispatch personnel for system development?
- a) Since the complaints voiced by development personnel dispatched by Company A were minor, they were handled without notifying Company A.
 - b) Since the development personnel from Company B were well versed in the work, they were used for more than one year until the project was completed.
 - c) Because development personnel were dispatched by Company C to improve development efficiency in the development department of a consignment company, they received instructions and commands from a representative of Company C.
 - d) To make up for a shortage of personnel, personnel from Company D, which has no business affiliations with Company E, were sent temporarily to Company E under a dispatch contract concluded with Company E.