October 2020

IT Passport Examination

Questions must be answered in accordance with the following:

Question Nos.	Q1 – Q100
Question Selection	All questions are compulsory.
Examination Time	9:30 – 11:30 (120 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 fall IT Passport Examination usually conducted?

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

   Since the correct answer is "c)" (October), 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. When the reward for an improvement proposal concerning business operations is determined based on the decision table below, how much is the reward for an improvement proposal for an improvement of $20,000 and a turnaround time reduction of three days?   Here, "Y" in the table means that each condition holds "true", and "N" means "not true".   In addition, "√" indicates the reward that applies to a specific combination of these conditions.

Condition	Improvement of less than $10,000	Y	Y	N	N
	Turnaround time reduction of less than one (1) week	Y	N	Y	N
Reward	$50	√			
	$100			√	
	$150		√		
	$300				√

a) $50   b) $100   c) $150   d) $300

Q2. As shown in the figure below, decimal numbers 2, 5, 10, and 21 are represented using five (5) squares that are black or white.

　　2　　□□□■□
　　5　　□□■□■
　10　　□■□■□
　21　　■□■□■

A white square indicates 0, and a black square indicates a positive value that is different depending on the position of the square.   When the sum total of the values of the five (5) squares shows a numeric value, which of the following decimal numbers is represented by ■■□□□?

a) 12   b) 20   c) 24   d) 30

Q3. When a chairperson and a secretary are selected from three (3) candidates with a method that allows dual roles, from the three (3) candidates, there are three (3) combinations for the selection of a single chairperson and three (3) combinations for the selection of a secretary, so in total, there are nine (9) combinations for the selection of a chairperson and a secretary. When a chairperson and a secretary are selected from five (5) candidates with a method that allows dual roles, how many combinations for the selection are there?

   a) 5   b) 10   c) 20   d) 25

Q4. Which of the following is always true for two (2) sets A and B? Here, $(X \cap Y)$ represents the part that belongs to both X and Y (intersection set), and $(X \cup Y)$ represents the part that belongs to at least one of X or Y (union set).

    a) $(A \cup B)$ is a subset of the complement of $(A \cap B)$.
    b) $(A \cup B)$ is a subset of A.
    c) $(A \cap B)$ is a subset of $(A \cup B)$.
    d) $(A \cap B)$ is a subset of the complement of A.

Q5. In a queue, three elements 33, 27, and 12 are enqueued in this order. After the element 45 is enqueued to this queue, two (2) elements are retrieved (or dequeued). Which of the following is the second element to be retrieved?

    a) 12   b) 27   c) 33   d) 45

Q6. There exist four (4) states numbered 1 through 4.　The four (4) states are connected as shown in the figure below, and the state transition occurs in a clockwise or counter-clockwise direction.
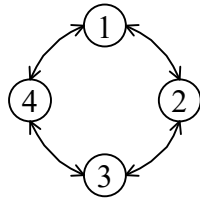
If the current state is 1, which of the following states is reached after the procedure below is performed twice?

[Procedure]
The number of the current state is multiplied by 11, and the result is divided by 3. The process below is performed based on the remainder of the division.
- When the remainder is 0, a transition to the next state occurs in the clockwise direction.
- When the remainder is 1, a transition to the next state occurs in the counter-clockwise direction.
- When the remainder is 2, a transition to the state after the next state occurs in the clockwise direction.

a)　1　　　　　　　b)　2　　　　　　　c)　3　　　　　　　d)　4

Q7. Which of the following is an appropriate description concerning HTML?

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

Q8. Which of the following is an appropriate description concerning the Java language?

  a) It is a markup language used for describing Web pages.
  b) It is a language developed for scientific and engineering calculations.
  c) It is an object-oriented language that provides platform-independent portability.
  d) It is a language developed for business-oriented calculations.

Q9. Which of the following is an appropriate way for extracting data from a stack that stores multiple data?

  a) Data is extracted from an arbitrary location that is specified, regardless of the sequence that data is stored in.
  b) Data that was stored last is extracted first.
  c) Data that was stored first is extracted first.
  d) Data has a key, and it is extracted according to the priority of the key.

Q10. Which of the following is the appropriate description concerning a device driver that enables the use of peripheral equipment with a PC?

  a) When a hard disk drive is initialized and the operating system is reinstalled, it is necessary to reinstall device drivers that were installed separately to the operating system.
  b) When new application software is installed, it is necessary to reinstall all device drivers that this software uses.
  c) Even if a device driver is no longer required, a user cannot delete the device driver once it is installed.
  d) If only one (1) device driver for a printer is installed, all printers can be used regardless of manufacturer or model.

Q11. Which of the following is an appropriate description of the cache memory of a CPU?

    a) The size of cache memory is greater than or equal to the size of main memory.

    b) Cache memory is used to reduce the effective access time of main memory.

    c) On computers with a large main memory, there is no effect of cache memory.

    d) In order to increase the hit rate, the user specifies the frequently used programs to be resident in cache memory.

Q12. A list of PC hardware contains the items that are shown in the Table. Which of the following is an appropriate description concerning these items?

CPU	
	Operating frequency
	Number of cores/threads
	Cache memory

    a) The operating frequency shows the number of the signals generated per second that synchronize the timing of arithmetic processing, and the internal processing speed of the CPU is inversely proportional to the operating frequency.

    b) The number of cores shows the number of core parts that are built into the CPU and are responsible for arithmetic processing, and there are dual core CPUs and quad core CPUs, etc.

    c) The number of threads shows the number of threads that can be executed simultaneously in applications, and the smaller the number the higher the speed of processing can be.

    d) Cache memory is a storage unit that is placed inside the CPU and can be written to and read from at high speed, and secondary cache is closer to the CPU core than primary cache is.

Q13. Which of the following is appropriate as a description concerning Plug and Play?

a) When a peripheral device is connected to a PC, installation and settings of the device driver are performed automatically.

b) Software for enhancing the functions of application software is installed separately.

c) Power is supplied from a PC to a peripheral device via a cable connected to the peripheral device.

d) A specific program is executed, and the system performance is evaluated on the basis of the time taken for the processing.

Q14. Which of the following is an explanation of the reliability index that is calculated by the expression below?

$$\frac{\text{MTBF}}{\text{MTBF}+\text{MTTR}}$$

a) Average time until a system failure occurs

b) Average time taken to recover a system after a failure

c) Proportion of the operation time of a system to the total time

d) Proportion of the downtime of a system to the total time

Q15. When a computer system operates for 1,200 hours, the status of the normal operation time and the repair time is shown in the table below. What is the value of MTTR of the system?

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

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

Q16. The system configurations A through C are made up by connecting multiple identical devices. Which of the following is a list where A through C are sorted in descending order of availability? Here, ─□─ represents a device. The parallel connection requires only one (1) of the devices to be functional, while the series connection requires all devices to be functional.
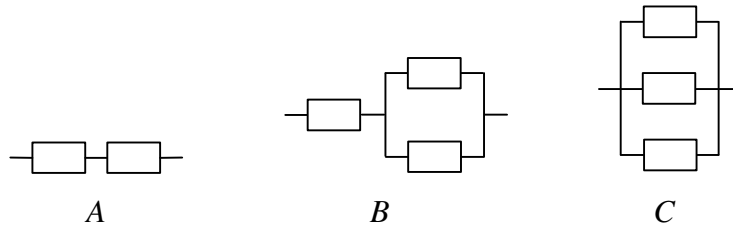
a) *A, B, C*   b) *B, A, C*

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

Q17. When the types of programs that are executed when a PC is started are broadly classified into three categories, namely BIOS (Basic Input Output System), OS, and resident application program, which of the following is the order of execution of the programs?

a) BIOS, OS, resident application program
b) OS, BIOS, resident application program
c) OS, resident application program, BIOS
d) Resident application program, BIOS, OS

Q18. Spreadsheet software is used to predict sales according to the weather. The table is a worksheet into which the probability for the weather type (sunny, cloudy, rainy) on the day to be predicted and the predicted sales amount by weather type for each product is entered. An expression is entered in cell E4 to calculate the predicted sales amount on the day for Product *A*, and this is copied to cells E5 through E6 and used. Under these conditions, which of the following is an appropriate expression to be entered in cell E4? Here, to obtain the predicted sales amount on the day for each product, the probability for each weather type is multiplied by the predicted sales amount for each of weather type, and then these values are added up.

	A	B	C	D	E
1	Weather type	Sunny	Cloudy	Rainy	
2	Probability of weather type	0.5	0.3	0.2	
3	Product name	Predicted sales amount when sunny	Predicted sales amount when cloudy	Predicted sales amount when rainy	Predicted sales amount on the day
4	Product *A*	300,000	100,000	80,000	
5	Product *B*	250,000	280,000	300,000	
6	Product *C*	100,000	250,000	350,000	

a) B2*B4+C2*C4+D2*D4

b) B$2*B4+C$2*C4+D$2*D4

c) $B2*B$4+$C2*C$4+$D2*D$4

d) $B$2*$B$4+$C$2*$C$4+$D$2*$D$4

Q19. Which of the following is an advantage of using OSS (Open Source Software)?

a) Technical support is provided free of charge from the developer at the time of installation.

b) The software is not prone to infection of viruses, as the source code is not released.

c) Compensation can be received for damages caused by defects in the software.

d) The source code can be modified to fit the environment of the user in accordance with the license conditions.

Q20. Multiple files stored on a hard disk are used in work, from Monday to Friday. In order to handle failure of the hard disk, the data is backed up to another hard disk after the end of each day's work. When the backup has following conditions, what is the total time required (in minutes) to perform backups of data from Monday to Friday?

[Conditions for backups]
(1) There are 6,000 files used in work, each with a size of 3 Mbytes.
(2) In each day's work, 1,000 files are modified. Modifications do not change the size of the files.
(3) Files are copied to the other hard disk at a speed of 10 Mbytes/second. One (1) file is backed up at a time; backup continues without interruption.
(4) From Monday to Thursday, only files modified that day are backed up. On Friday, all files are backed up, whether or not they have been modified.

a) 25   b) 35   c) 50   d) 150

Q21. Which of the following is an appropriate combination of software that includes only OSS (Open Source Software)?

a) Internet Explorer, Linux, PostgreSQL
b) Internet Explorer, PostgreSQL, Windows
c) Firefox, Linux, Thunderbird
d) Firefox, Thunderbird, Windows

Q22. Which of the following is an appropriate description concerning the OS for PCs?

a) Each PC allows only one (1) type of OS to be installed and run on it.
b) There is no OS for PCs equipped with a 64-bit CPU.
c) When an OS is upgraded to a new version, all of the software operating with the old version of the OS cannot be used any more.
d) There exist some OSs for PCs that can be started up by using an external storage device, such as a CD-ROM and USB memory, other than the hard disk.

Q23. Which of the following is the appropriate merit of server virtualization?

a) It enables a single computer to be run like it was multiple servers, so it enables the flexible distribution of physical resources in response to demand.
b) A server is built by plugging the required number of blades that have a computer function into a chassis, so the number of machines can be flexibly increased and decreased.
c) The computers that constitute a server are used without being connected to other servers, so security can be improved.
d) Multiple computers that constitute a server perform the same processing and the results of the processing are cross-checked against each other, so reliability can be improved.

Q24. Which of the following is an input method where a touch panel is operated by touching it in two or more locations simultaneously?

a) Touch type
b) Double click
d) Multitask
d) Multi-touch

Q25. On a display screen, various colors are created through additive color mixing with three colors, namely red, green, and blue.   When the red, green, and blue are mixed evenly, which of the following colors is formed?

a) Red-violet
b) Yellow
c) White
d) Green rust

Q26. In a relational database, which of the following is the reason for a primary key being specified?

    a)   To clearly indicate that something is not subject to an arithmetic operation
    b)   To enable the search of the column that is specified as the primary key
    c)   To prevent reference from another table
    d)   To enable any record in the table to be uniquely identified

Q27. Sales data is to be managed with tables in a relational database. When the tables for sales data are designed, which of the following activities analyzes the relationship between the fields of the tables and decompose the tables so that there are no duplications or inconsistencies in the data?

    a) Join
    b) Projection
    c) Normalization
    d) Exclusive control

Q28. Which of the following is an appropriate description about association of records for a relational database?

    a) Records in multiple tables are associated at the same row position relative to the first row in each of the tables.
    b) Records in multiple tables are associated through the values of corresponding fields.
    c) Records are associated with one another by a pointer that represents the parentage.
    d) Records are associated with one another by a hash function.

Q29. A "Sales Details" table and a "Products" table are managed in a relational database. What is the total number of notebooks sold?

Sales Details

Voucher_number	Product_code	Number_sold
H001	S001	20
H001	S003	40
H002	S002	60
H002	S003	80

Products

Product_code	Product_name
S001	Pencil
S002	Eraser
S003	Notebook

a) 40   b) 80   c) 120   d) 200

Q30. Which of the following is the appropriate combination of terms or phrases to be inserted into blanks *A* and *B* in the description below concerning NAT?
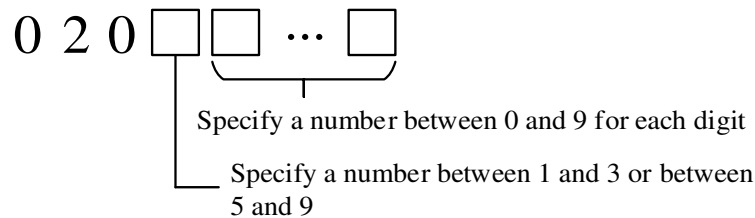
NAT is often used in order to connect an office or a household LAN to the Internet, and it converts between [*A*] and [*B*] .

	A	*B*
a)	private IP addresses	a MAC address
b)	private IP addresses	a global IP address
c)	host names	a MAC address
d)	host names	a global IP address

Q31. Mr. *A* sent an e-mail to the three (3) people Mr. *P*, Mr. *Q*, and Mr. *R*. He entered Mr. *P*'s e-mail address in the To field, Mr. *Q*'s e-mail address in the CC field, and Mr. *R*'s e-mail address in the BCC field. Among the recipients of the e-mail Mr. *P*, Mr. *Q*, and Mr. *R*, which of the following lists contains all and only the people who can know that the e-mail with the same content is sent to all three (3) people?

a) Mr. *P*, Mr. *Q*, Mr. *R*   b) Mr. *P*, Mr. *R*

c) Mr. *Q*, Mr. *R*   d) Mr. *R*

Q32. In phone numbers that have the format below, eight billion numbers are to be created. What is the minimum number of digits required for the phone numbers? Here, "020" is included in the digits.

0 2 0 ☐☐ ⋯ ☐

Specify a number between 0 and 9 for each digit

Specify a number between 1 and 3 or between 5 and 9

a) 11   b) 12   c) 13   d) 14

Q33. Which of the following is <u>not an appropriate</u> description of online storage?

a) It can be used not only from a computer, but also from a smartphone or a tablet, if the device is connected to the Internet.

b) There is a free service that can be used with limited capacity and functionalities.

c) There is a service that allows multiple registered users to share and edit the same file.

d) If the capacity of the auxiliary storage unit built into the user's computer or tablet is increased, the capacity of online storage will also increase automatically.

Q34. Which of the following is an appropriate explanation of tethering?

a) A type of virus that replicates itself and spreads infection throughout a network

b) A function of connecting a PC to the Internet by using a communication terminal such as a smartphone like a mobile router

c) A method of detecting a tamper by using a hash function and public key cryptography for electronic data

d) An attack that attempts to illegally manipulate the information in a database by deliberately entering an SQL command in an input field on a web page

Q35. Which of the following lists contains all appropriate descriptions concerning an e-mail sent as a chain letter?

A: It is used for the purposes of communication and information sharing within a group.
B: It places a wasteful load on network and servers.
C: The same e-mail is repeatedly replied to.
D: The text of the e-mail encourages forwarding of the e-mail to many people.

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

Q36. There is a room that stores important information. Which of the following is the most appropriate countermeasure for unauthorized entry to this room and unauthorized access to the important information in the room?

a) The monitoring of entry and exit of the room and work that is performed in the room with security staff and monitoring cameras
b) The wearing of an entry pass in a place where other people cannot see it when in the room
c) The use of only electronic methods such as card authentication with no staffed desk for entrance and exit control
d) The informing of all employees of the existence of the room and the information that it stores

Q37. Which of the following is the appropriate description concerning a wireless LAN?

a) Countermeasures against unauthorized use of an access point are required.
b) The standard for encryption is limited to WPA2.
c) Communication between a terminal and an access point is possible over any distance.
d) There are multiple standards for wireless LANs, and communication is possible among them all.

Q38. There is an electronic file that needs to be made confidential. Which of the following is the appropriate security technology to use in order to ensure the confidentiality of this file?

a) Access control
b) Timestamp
c) Digital signature
d) Hot standby

Q39. One of the methods of cracking a password is a brute force attack that attempts all character combinations. When the number of characters of a password that is composed of 26 letters from *A* through *Z* is increased from four (4) to six (6) characters, by what factor is the maximum number of attempts to successfully crack the password with the brute force attack increased?

a) 2　　　　　　b) 24　　　　　　c) 52　　　　　　d) 676

Q40. Which of the following is used to confirm that there is no falsification of the content of an e-mail?

a) IMAP
b) SMTP
c) Information security policy
d) Digital signature

Q41. When risk treatment in risk management for information security is divided into the four (4) categories of risk transfer, avoidance, acceptance, and mitigation, which of the following is an appropriate example of risk mitigation?

a) A company runs a service on the Internet to provide confidential information to specific users, but in consideration of the risk of information leakage, the company withdraws from the service.
b) A company buys insurance against the risk of personal information leakage.
c) Entry to a server room is limited to administrators, and the risk of theft of devices is low so no additional countermeasures are taken.
d) The information that is stored on the hard disk drive of a notebook PC is encrypted in order to protect against the risk of information leakage due to loss and theft of the notebook PC.

Q42. Which of the following is an appropriate example of biometric authentication?

    a) Authentication of an individual by the shape of the veins in a finger

    b) Authentication of an individual with a digital certificate

    c) Authentication by testing whether a distorted text in an image can be read correctly or not

    d) Authentication by using a one-time password

Q43. Which of the following is the aim of an attacker who infects someone else's PC with ransomware?

    a) To obtain personal information on the PC via a network

    b) To make files on the PC unusable, and to obtain money in exchange from unlocking them

    c) To obtain characters typed with the PC keyboard via a network

    d) To maliciously operate the PC by sending instructions for operations via a network

Q44. An IoT device with a vulnerability was used in large numbers by several companies. One (1) of the devices was infected with malware, and the infection spreads to many other IoT devices. On a certain date at a certain time, the many IoT devices that were infected with the malware attempted many connections to a certain website simultaneously, and this forced the service of the website to stop. Which of the following attacks was made against the website?

    a) DDoS attack   b) Cross-site scripting

    c) Dictionary attack   d) Social engineering

Q45. Which of the following is an appropriate explanation of phishing?

a) An attacker's act of sending a command via network to a virus-infected PC and having it execute an illegal program

b) Sending an e-mail that pretends to be from a financial institution, directing a user to a false web site, and illegally acquiring a PIN, a credit card number, or other information

c) Identifying a password by using a dictionary data that enumerates strings that are likely to be used as a password

d) Sending a large number of packets from multiple computers to a target server and disabling the function of the server

Q46. A company contracted to develop an accounting system held meetings with the customer and clarified the types of required financial statements and the target value of the processing time from confirmation of accounting data to the output of the documents of settlement of accounts. Which of the following is the appropriate process for implementing this activity?

   a) System test
           b) System requirements definition
   c) Software detailed design
        d) Software architecture design

Q47. What is the term for revising and changing programs after system development?

   a) Computerization planning
        b) System operation
   c) Software maintenance
        d) Requirements definition

Q48. The processes of system development include software requirements definition, software architecture design, software integration test, software installation, and software acceptance. Which of the following activities is implemented during software acceptance? Here, the persons concerned with system development are divided into developers and users.

   a) The developers deploy the software for which development is complete into the production environment.
   b) The developers interview the users for clarification of the functions and performance required of the software.
   c) The users confirm that the software satisfies the requirements and is at a usable level.
   d) The developers perform a review to confirm that the definition of software requirements satisfies the needs of the users.

Q49. When the test for system development is conducted in the order of unit test, integration test, system test, and operational test, which of the following is appropriate as an activity in the system test?

a) It is verified that there is no error in each program.
b) It is verified by the developer that the performance requirements are being satisfied.
c) It is verified that there is no error in the interface between programs.
d) It is verified that business operations can be performed as defined in the requirements through actual operation by users.

Q50. Which of the following is an appropriate description concerning the water fall model known as one of software development models?

a) It is a technique in object-oriented development for making improvements through trial and error by repeatedly going back and forth between design and programming.
b) It is a technique for making improvements by repeating the development process for each subsystem while responding to requests from users.
c) It is a technique that divides the processes of system development into stages, and based upon the output of previous processes, performs later processes in order.
d) It is a technique that creates a prototype at an early stage of system development, and defines requirements and specifications with input from user comments.

Q51. When a system development project is started, it is foreseen that the progress of the project may be affected by a large number of requests for specification change that come from users during the course of development. Which of the following is the most appropriate measure for ensuring that there will be no deterioration in quality nor delay in delivery?

a) Declaring to the customer that requests for change will not be accepted after the completion of design
b) Shortening the test period by skipping tests when a delay occurs during the course of the project
c) Including in the plan that the implementation of some functions will be called off if there are a large number of requests for change
d) Reaching an agreement beforehand with the customer concerning the priority

Q52. Which of the following is the most appropriate description concerning risk management in a project?

a) Since a project has a predetermined deadline, all risks must be identified at the time of start of the project.

b) Since problems can occur in a project if any risk is realized, risk measures are planned so that all risks are avoided.

c) In order to plan risk measures, risks are prioritized on the basis of the probability of occurrence and level of impact.

d) In order to cut down the cost involved in taking action against a risk, risk measures are planned when a risk is realized.

Q53. Which of the following is a diagram where bugs detected during the testing of a system are accumulated by their cause and arranged in the order of higher frequency of cause, and a cumulative curve is inserted?

a) Scatter diagram
b) Cause and effect diagram
c) Pareto chart
d) Histogram

Q54. When the outsourced development project of a system has passed beyond its halfway mark, there is a request from the outsourcer for function addition to the system . Which of the following is the most appropriate action of the project manager?

a) Accepting the request and securing the budget and staff members
b) Declining the request on account of the fact that changes made when half of the duration of the project has surpassed can generally not be accepted
c) Taking into account the impact on the cost and schedule, and following the procedure of change management
d) Quickly updating the baseline of scope since only the project scope will be affected

Q55. The development of 50 programs is outsourced either to Company *A* or Company *B*. Which of the following is the combination of a company with a short development period and a company with a low development cost?

[Assumptions]
- Company *A* Productivity: Creation of one (1) program in two (2) days
    Cost: 40,000 yen/day
- Company *B* Productivity: Creation of one (1) program in three (3) days
    Cost: 30,000 yen/day
- One (1) program is created at a time in a sequence

	Short development period	Low development cost
a)	Company *A*	Company *A*
b)	Company *A*	Company *B*
c)	Company *B*	Company *A*
d)	Company *B*	Company *B*

Q56. Which of the following is the appropriate explanation of a master schedule in a system development project where processes from requirements definition to installation are performed?

a) A schedule that describes in detail the activities of one (1) week
b) A schedule that describes the activities of one (1) day, the start and end time of the activities, and the persons in charge
c) A schedule that describes in detail the activities of the main processes
d) A schedule that aggregates the main deliverables and activities of the entire project

Q57. Which of the following items must be clarified in order to determine the appropriate assignment of the project members?

a) Cost estimation method
b) Reporting method of activity progress
c) Acceptance standards of deliverables
d) Roles and responsibilities to be allocated

Q58. Which of the following is the most appropriate example concerning a chatbot that uses AI?

    a) By connecting everything over the Internet, the switch of the air conditioner in one's house can be turned on by a smart device from the outside of the house.

    b) By recognizing and learning a large number of images of various animals, a computer can differentiate between the images of a dog and a cat.

    c) If questions on how to use a product are entered, a person who has detailed knowledge submits a reply or advise.

    d) If a user enters the desired functions of a product on a sales site of products, the computer introduces recommended products in an interactive manner.

Q59. In the PDCA cycle of service level management, which of the following is implemented as *C* (Check)?

    a) Providing services that are based on the SLA

    b) Preparing an improvement plan for services on the basis of the report and review of service provision results

    c) Agreeing upon the desired service quality on the basis of the service requirements and the service improvement plan, and preparing an SLA

    d) Monitoring and measuring the provided services, and preparing a service report

Q60. Which of the following is the appropriate characteristic of agile development?

    a) Information is passed between processes through documents, making it easy to understand the progress of overall development.

    b) Prototyping is implemented in each process, making it possible to locate potential problems and requests.

    c) Development is taken forward in a stepwise manner, resulting in retrospective corrections when a problem occurs in the last process, thus increasing rework.

    d) Priority is given to preparation of software over preparation of documents, making it possible to quickly incorporate the changing demands of customers.

Q61. Which of the following is an appropriate activity for planning and implementing the points described below in order to maintain and preserve the project room and equipment used for system development?

A chamber to ensure confidentiality of test data is set up within a project room, and entrance and exit is controlled. The server that is set up for testing is connected to an uninterruptible power supply in order to prevent data loss due to a power outage.

a) Asset management
b) Environment management system
c) Quality management system
d) Facilities management

Q62. In IT service management, which of the following is appropriate as a process for resolving the root causes of incidents and preventing their recurrence?

a) Incident management
b) Change management
c) Problem management
d) Release management

Q63. Which of the following is the purpose of systems audit?

a) Making a backup of important data in the information system operation stage
b) Improving the skills of the information system development staff members
c) Investigating the user needs in the information system planning stage, and documenting them as computerization requirements
d) Controlling the risks concerning the information system to enable a safe, effective, and efficient functioning of the information system

Q64. Which of the following is the appropriate explanation of monitoring in internal control?

    a)   It is a process of continuously evaluating if internal control is working effectively.

    b)   It is a process of promoting compliance to the laws and other regulations concerning internal control.

    c)   It is a process of constructing an organization for internal control.

    d)   It is a process of analyzing the risks that hinder internal control.

Q65. Which of the following persons are responsible for building and promoting IT governance in a company?

    a)   Shareholders

    b)   Directors

    c)   Employees

    d)   Information system department members

Q66. When the purchase and sales of a product in April are as in the table below, what is the inventory value in yen for the product at the end of April according to the moving average method? The moving average method calculates the average unit price of products in the inventory each time a purchase is made, and uses the average unit price for products in the inventory immediately beforehand for the calculation of the inventory value.

Date	Note	Replenishment			Shipping			Stock		
		Quantity (unit)	Unit price (yen)	Total (yen)	Quantity (unit)	Unit price (yen)	Total (yen)	Quantity (unit)	Average unit price (yen)	Total (yen)
April 1	Carry over	100	10	1,000				100	10	1,000
April 8	Purchase	100	14	1,400				200	12	2,400
April 18	Sales				150			50		
April 29	Purchase	50	16	800				100		

Note: The shaded parts are not shown.

 a) 1,280   b) 1,300   c) 1,400   d) 1,500

Q67. When the planned production quantity of Product A and the total required quantity and the inventory quantity of Component B are as shown in the table below, what is the minimum order placement quantity I of Component B required in Week 2?

[Conditions]
- The lead time (the period from the start of work until the completion of work) for Product A is ignored.
- Two (2) of Component B are required for the production of one (1) of Product A, and Component B is only used for the production of Product A.
- An order for Component B is placed after the end of production each week, and it is delivered before the start of production in the next week.
- The safety stock for Component B is 25% of the total required quantity of Component B for the relevant week.
- The inventory quantity of Component B before the start of production in Week 1 is 100.

Unit: Number of products/components

	Week 1	Week 2	Week 3
Planned production quantity of Product A	40	40	20
Total required quantity of Component B	80	80	40
Inventory quantity of Component B (After end of production)	20		
Order placement quantity of Component B at the end of production		I	

Note: The content of the shaded portion is not shown.

a) 30　　　　　b) 40　　　　　c) 60　　　　　d) 80

Q68. A restaurant has the total sales, the variable cost, the fixed cost, and the business days per year shown below. In order for the restaurant to make at least 4 million yen in annual profit, what is the minimum number of customers required per business day?

Total sales per customer	3,000 yen
Variable cost per customer	1,000 yen
Annual fixed cost	20 million yen
Business days per year	300 days

a) 14   b) 20   c) 27   d) 40

Q69. Retail company A is teaching the general distribution process for food products in an easily understandable manner at elementary schools that are near the company's distribution center. Which of the following is an idea behind these activities by company A?

a) CSR   b) Alliance
c) Core competence   d) Corporate governance

Q70. One (1) piece of Product P consists of two (2) pieces of Part Q, and Part Q consists of four (4) pieces of Part R. When there is one (1) piece of Part Q and there are three (3) pieces of Part R in the inventory, how many more pieces of Part R are needed to produce six (6) pieces of Product P?

a) 41   b) 44   c) 45   d) 48

Q71. When income statements for the previous term and the current term are compared, which of the following is an appropriate description of a change from the previous term to the current term?

Unit: million yen

Account	Previous Term	Current Term
Net sales	7,500	9,000
Cost of sales	6,000	7,000
Selling, general and administrative expenses	1,000	1,000
Non-operating income	160	150
Non-operating expenses	110	50
Extraordinary profits	10	0
Extraordinary losses	10	0
Taxes	250	500

a) Gross profit on sales increased by 1,500 million yen.
b) Operating profit increased by 50%.
c) Ordinary profit increased twofold.
d) Current net income remained unchanged.

Q72. Product X is manufactured under the conditions described below. When the yield of Component Y and Component Z is as shown in the table below, what is the required raw material input amount *A* of Component *Y* in kilograms for manufacturing 300 units of Product *X*? Here, the yield of Product *X* is 100%, and all components are newly manufactured.

[Manufacturing conditions of Product *X*]
- One (1) assembled product *X* consists of three (3) units of Component *Y* and one (1) unit of Component *Z*.
- Component *Y* and Component *Z* are manufactured from respective raw material.
- One (1) unit of Component *Y* or Component *Z* can be manufactured from one (1) kilogram of the raw material respectively.

Component type	Raw material input amount	Yield	Number of completed components
Y	A kg	90%	
Z	600 kg	50%	300 units

Note: The shaded part is not shown.

a) 225   b) 250   c) 900   d) 1,000

Q73. Which of the following is free software that can be copied or modified freely without permission from the author?

a) Shareware   b) Package software
c) Public domain software   d) Utility software

Q74. Among actions concerning the creation of software, which of the following is a copyright violation?

a) Creating another Web page by using the source of HTML that was downloaded from the Internet
b) Creating a program based on an idea that was discussed on a bulletin board on the Internet
c) Creating a program to increase a company's operational efficiency by using a program that was created during one's school days
d) Creating a program based on a flowchart that was shown in a purchased book

Q75. Which of the following codes stores information in a vertical and horizontal two-dimensional pattern?

a) ASCII code
b) G-code
c) EAN code
d) QR code

Q76. Which of the following is the purpose of strengthening compliance in corporate management?

a) To prevent corporate management and employees from being involved in misconduct or scandals that may threaten the continued existence of the company
b) To retain management resources for differentiation from competitors and thereby gain a competitive edge
c) To curb the exercise of the management powers and thereby build a framework for sound management
d) To improve the satisfaction of stakeholders including customers, shareholders, and employees in order to achieve the company's continued growth

Q77. Which of the following is an international standard for environmental management systems developed by ISO?

a) ISO 9000
b) ISO 14000
c) ISO/IEC 20000
d) ISO/IEC 27000

Q78. Which of the following examples of the sending of e-mail is <u>inappropriate</u> from the standpoint of the protection of personal information?

   a) In responding to an e-mail asking questions about a product, you placed the e-mail addresses of multiple customers in the "CC" field as you want these customers to read the response.
   b) You created one (1) e-mail message for each of your top 10 customers as determined by the amount of mail-order purchases, in order to inform each customer of a corresponding prize.
   c) You sent an e-mail message with information on an alumni meeting, and addressed the message to the e-mail addresses of all members listed in the alumni association directory that is distributed to all members.
   d) When you were arranging a special spring exhibition, you placed the e-mail addresses of selected members in the "BCC" field of an e-mail message and sent the message in order to solicit exhibits.

Q79. Which of the following is an appropriate explanation of SWOT analysis?

   a) It is a technique for deriving the future direction of corporate activities by analyzing opportunities and threats underlying in the external environment surrounding the company, and the strengths and weaknesses of the company.
   b) It is a technique of evaluating and analyzing the business performance of a company in a well-balanced manner, from the perspectives of finance, customer, internal business processes, and learning and growth.
   c) It is a technique of designing corporate activities from the viewpoint of what kind of value the in-house activities finally generate for customers and whether this satisfies the customers.
   d) It is a technique of plotting a business on a matrix created by the two (2) quantitative items of market growth rate and market share, and then optimizing the allocation of management resources.

Q80. Which of the following is a system that centrally manages the processes from materials procurement to product sales, and aims for the optimization of supply?

   a) ASP   b) CRM   c) ERP   d) SCM

Q81. Among the business alliance strategies, which of the following is the appropriate explanation of a joint venture?

a) It refers to a company that is managed by two (2) or more companies who together provide the funding.
b) It refers to building cooperative relationships between companies, such as mutual financial contribution and cross-shareholdings.
c) It refers to the obtaining of control over a counterpart company by a corporate merger or acquisition.
d) It refers to permitting the usage of rights concerning technology, a brand, or sales activities, etc.

Q82. When the market development strategy, market penetration strategy, product development strategy, and diversification strategy that represent the growth strategy of a company are positioned in four (4) cells of a matrix formed by existing markets and new markets, and existing products and new products, in which cell is the market penetration strategy positioned?

	Existing products	New products
Existing markets	*A*	*B*
New markets	*C*	*D*

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

Q83. Which of the following techniques is used to set specific targets and evaluate the result from the four (4) viewpoints of "finance," "customer," "internal business processes," and "learning and growth" in order to implement the vision and strategy of the company?

a) PPM   b) SWOT analysis
c) Balanced scorecard   d) Marketing mix

Q84. Which of the following is an appropriate explanation of blue ocean strategy?

a) Generating a new market that has no competition by providing new value

b) Trying to increase sales opportunities by handling a wide range of products other than best-selling products

c) Thoroughly proceeding with differentiation from products provided by the top companies in the industry

d) Building predominance over competitors through cost reduction

Q85. Which of the following is an approach among two (2) or more companies, where each of them is granted the right to use the technologies patented by the other parties?

a) Alliancing

b) Cross licensing

c) Joint venturing

d) Loyalty

Q86. Which of the following terminologies refers to an initiative to develop unprecedented and innovative services by utilizing IT in the field of finance, such as a service provided by a bank where AI manages depositors' assets automatically?

a) FA

b) Fintech

c) OA

d) Sharing economy

Q87. Which of the following is the most appropriate description concerning deep learning?

a) It is a mechanism that integrates information and the workflow between departments that are involved with customers, such as sales, marketing, and after-sales service.

b) It is a form of education, learning, and training that is implemented by using digital devices such as computers, and communication networks.

c) It is a mechanism for the sharing and the effective utilization of the knowledge and knowhow possessed by each individual in an organization by the organization as a whole.

d) It is a technology where a computer itself identifies and learns the characteristics of data by analyzing a large volume of data with a model that imitates the neural circuits of a human being.

Q88. Which of the following is the most appropriate example of the utilization of artificial intelligence?

a) A system controls the acceleration, steering, and braking of an automobile without intervention by the driver.

b) A person can check occupancy for a conference room or toilet in real time from his or her desk in an office.

c) Approval for a transaction is granted through distributed consensus building technology without the need for a central administrator, such as a bank.

d) A person enters information in advance from a PC at his or her house in order to perform a money transfer automatically without going to the bank.

Q89. Which of the following is the most appropriate description concerning SEO?

a) Displaying search results that match the objectives of a community on social media to participants in the community

b) Using a search engine by a company to analyze the access log of the company's website, and checking for unauthorized access

c) Devising ways to display a certain website at the top of the search results when a user uses a search engine to search for a keyword

d) Investigating what kind of search engine users want, and developing a search engine that fits their needs

Q90. Which of the following examples of e-business sales methods is based on the concept of the long tail?

a) Placing products on an Internet auction site for a long time, and selling the products to the persons who win the auction by bidding the highest price

b) Enabling online ordering of products that match customers' physiques, on the basis of customers' body measurements taken at a store, in order to encourage ongoing purchase of the company's products

c) Engaging in online sale of large volumes of only those products that have shown large sales volume over a long period of time in physical stores

d) Handling and engaging in online sales of a wide range of products for which the prospect for number of sales is considerably low

Q91. Which of the following is an appropriate explanation of CAD?

a) Education with the use of computers
b) Manufacturing with the use of computers
c) Design and drafting with the use of computers
d) Software design, development, and maintenance with the use of computers

Q92. Which of the following is an appropriate example of a function that uses an IC tag?

a) Scanning barcode at a POS register
b) Sending images from a remote medical system
c) Identifying current location with a car navigation system
d) Monitoring at theft prevention gate in a library

Q93. Which of the following is the most appropriate example of IoT?

a) A member can participate in an auction by connecting the member's PC to the auction venue via the Internet.
b) An employee can use groupware anytime and anywhere via the Internet by moving it from an internal server to a server in an external data center.
c) A pharmacy can manage the dosing history for a drug via the Internet by embedding a sensor in the container, and utilize this in guidance for the patient taking the drug.
d) A preparatory school can enable students to take classes anytime and anywhere with a smartphone or PC by streaming video of classes from a website.

Q94. Against a background of issues such as population decline and aging, attempts are being made to use ICT in order to streamline the functions and services of cities and regions and make them more advanced in order to solve regional problems, and rejuvenate regions. Which of the following is the most appropriate term or phrase to describe such a solution for community development?

a) Capacity
b) Smart city
c) Diversity
d) University

Q95.   The task of using statistics, machine learning, and other such methods to analyze large volumes of data and gain hints and ideas for the creation of new services and value is now very important. Which of the following is the most appropriate human resource to perform this task?

a)   IT strategist
b)   System architect
c)   System analyst
d)   Data scientist

Q96.   Which of the following corresponds to information literacy?

a)   Knowledge of new PC products and the performance of each model
b)   The ability to perceive the impacts of technological innovations on society
c)   The ability to search for data necessary and use it in accordance with goals
d)   The ability to use high-level programming languages and develop software

Q97.   Which of the following is the most appropriate description of IoT?

a)   It is a learning mechanism in artificial intelligence.
b)   It is a mechanism where devices or control units equipped with a sensor connect directly to the Internet, and exchange a variety of information via the Internet.
c)   It is a group of functions and procedures that are made public in order to enable some of the features of a piece of software to be used by other programs.
d)   It is a tool that uses a software robot to streamline routine work.

Q98.   A company planning the development of a business information system decided to present an RFP to SI vendors. Which of the following must be described in the RFP at a minimum?

a)   The development schedule
b)   The functions that should be implemented in the business information system
c)   The method for achieving the business information system
d)   The project team

Q99. The table below shows the evaluated scores of the proposals of four (4) vendors from the viewpoints of management, technology, and price. When each score of the management viewpoint, technology viewpoint, and price viewpoint is weighted, and the vendor with the highest total score is selected as the supplier, which of the following vendors is selected?

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

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

Q100. Which of the following items is determined when computerization plan is created on the basis of a company's information system strategy?

a) Development schedule   b) Management objectives
c) Output screen layout   d) Hardware configuration