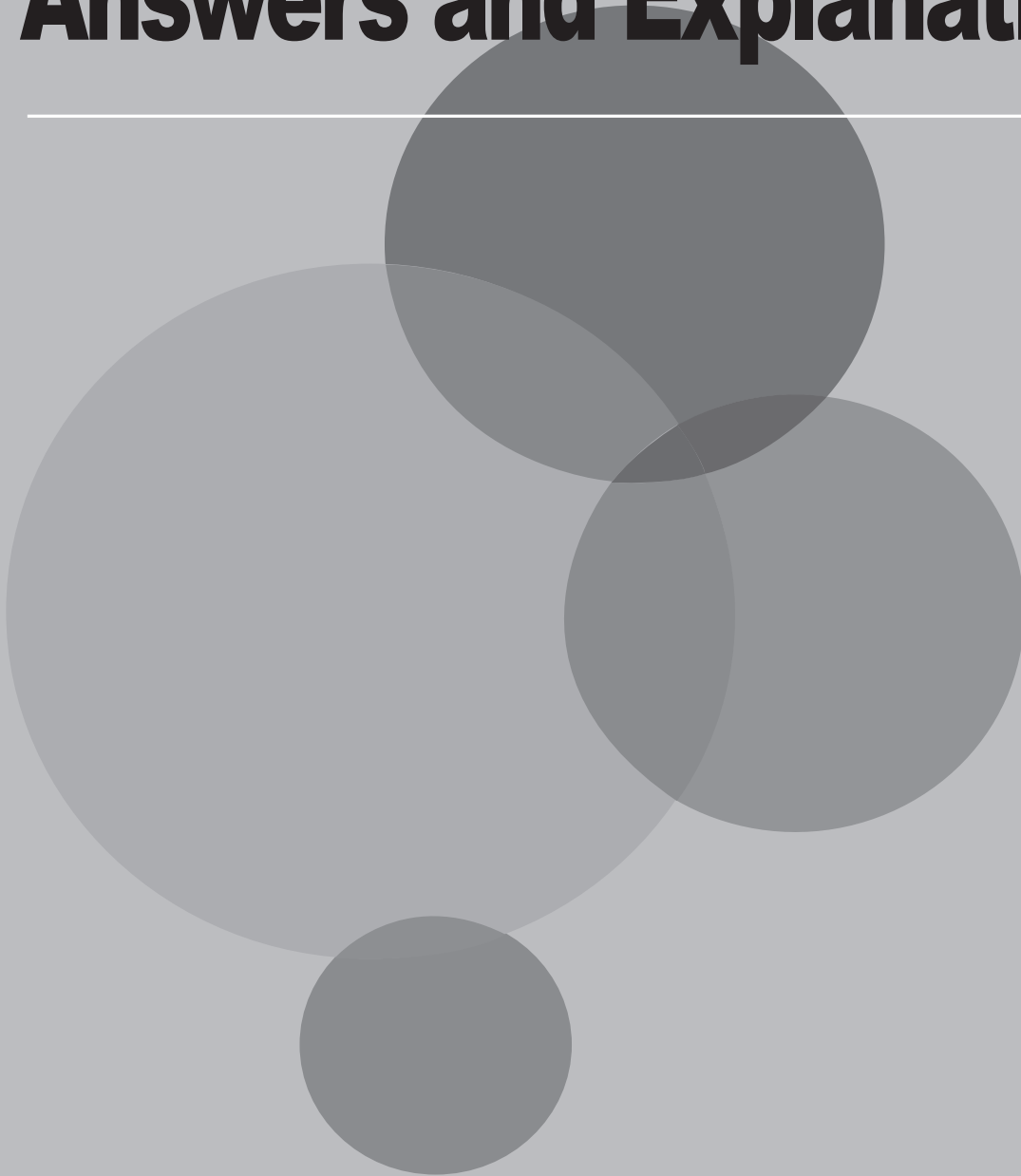


IT Passport Exam Preparation Book

Answers and Explanations



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Chapter quiz answers

Chapter 1 Corporate and legal affairs

Q1-1.

Answer C

Explanation

A project organization is structured from personnel who possess the required skills and experience, selected from different departments. It is only intended as a temporary organization and is disbanded once its purpose is accomplished.

Q1-2.

Answer C

Explanation

There are no preceding activities for activity A and activity B. Since activity A and activity B are the preceding activities for activity D, the correct Answer is c).

Q1-3.

Answer C

Explanation

A chart that contains both a bar graph and line graph is called a Pareto chart. The bars show the values of tabulated data by item in ascending order, and the line shows the cumulative totals of the items. It is frequently used for sales analysis and inventory management.

Q1-4.

Answer C

Explanation

From top to bottom, the shaded boxes correspond to “Gross profit”, “Operating profit”, and “Current term net profit.” Ordinary profit is calculated by adding the operating profit and non-operating income, then subtracting the non-operating expense.

Q1-5.

Answer C

Explanation

Taking a photograph from a commercially available book of landscape pictures, and posting/publishing the photograph on your Web page is an infringement on the rights of public transmission. Rights of public transmission are rights for broadcasting work or posting work on a Web page.

Q1-6.

Answer d

Explanation

White papers are reports that are published by organizations such as the national government, local government institutions, and independent administrative agencies. For that reason, reproduction of white papers is recognized for use in explanatory documents, unless it is explicitly indicated that reproduction is prohibited. (Article 32.2 of the Copyright Act)

Q1-7.**Answer b****Explanation**

Unauthorized computer access is the act of using the user ID or password of another person without permission, impersonating an authorized user, and removing usage restrictions to enable the use of a computer.

Q1-8.**Answer d****Explanation**

The purpose of the Labor Standards Act is to protect workers, who are in a socially and economically disadvantaged position compared with employers. It regulates minimum standards for labor conditions such as working hours, breaks, and vacations.

Q1-9.**Answer C****Explanation**

The act of providing personal information to a third party without the consent of the person is prohibited under the Act on the Prohibition of Personal Information. It is also illegal to handle personal information beyond the purpose of utilization that was initially stated.

Q1-10.**Answer C****Explanation**

A two-dimensional code is a JIS standard code that contains information in both the horizontal and vertical direction, enabling the code to hold more information. A QR code is a type of two-dimensional code that contains a cutout symbol on three corners to enable quick and accurate reading in any 360 degree direction.

Chapter 2 Business strategy

Q2-1.**Answer b****Explanation**

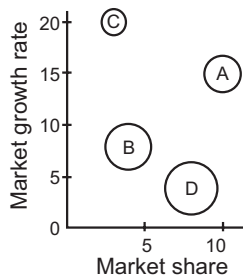
SWOT analysis analyzes the strengths and weaknesses of the internal environment within a corporation. The internal environment includes human resources, operating capabilities, product prices, sales capabilities, brands, competitiveness, and the financial position of the corporation. It determines strengths that should be capitalized on and weaknesses that should be overcome. The external environment surrounding a corporation is subject to evaluation under opportunities and threats in SWOT analysis. The external environment includes politics, economics, social circumstances, legislation, marketability, pricing changes, customer trends, and competing corporations. It determines opportunities that should be taken advantage of and threats that should be countered.

Q2-2.

Answer a

Explanation

Comparing the size of the circle and the coordinates, the correct answer is a).



Q2-3.

Answer b

Explanation

One-to-one marketing is an approach to satisfying individual customer needs, rather than targeting a group called a market.

Q2-4.

Answer a

Explanation

A balanced scorecard is a method of clarifying the goals and strategies of a corporation, and evaluating the business from various perspectives, rather than solely based on business results expressed as numbers. It determines whether the business results are balanced. The balanced scorecard evaluates business strategies from the four perspectives of financial, customer, business processes, and learning and growth, by integrating them into specific measures for daily activities.

Q2-5.

Answer d

Explanation

SCM uses computers or the Internet for integrated management, from supplier ordering and procurement of materials (raw materials and components) to inventory management and delivery of products. Various companies participate in SCM to manage the system through the unified exchange of information between the companies, which lowers distribution costs by reducing excess inventory.

- a): Describes CRM.
- b): Describes SFA.
- c): Describes ERP.

Q2-6.

Answer b

Explanation

The Delphi method is a technique for forecasting future events that are likely to occur. It is used in planning technology development strategies and other plans. Multiple experts are asked to generate their own opinions, and mutual feedback is collected to generate another round of opinions. By repeating this process, the method seeks to develop a statistical consensus of opinions.

Q2-7.**Answer b****Explanation**

A credit card is a card that is issued based on a contract between the consumer and a credit card company. The consumer can use this card within the scope permitted by the contract conditions (such as the expiry and credit limit) to purchase goods or receive services through deferred payment.

- a): A card used for personal identification such as an employee ID card or member card
- c): A debit card currently used at a financial institution that enables real-time purchases of goods from a bank account
- d): A card that is prepaid and used to pay for products or services

Q2-8.**Answer C****Explanation**

A traceability system makes it possible to track the production and distribution path of food from the consumption location back to the production location, in order to assure its safety.

Q2-9.**Answer d****Explanation**

A GPS (Global Positioning System) is a system that uses artificial satellites to determine the current position of an object. It is extensively used in devices such as car navigation systems and mobile phones to determine its current whereabouts.

Q2-10.**Answer C****Explanation**

An information appliance refers to a consumer electronics product that is equipped with a communication function able to connect to networks such as the Internet. For example, a remote control for a digital television can be used to answer a survey from a television program, a mobile phone can turn on the air-conditioner away from home, and a microwave can search and download recipes.

Q2-11.**Answer d****Explanation**

BtoC is an abbreviation for “Business to Consumer,” and refers to transactions between corporations and individuals. It is widely used in electronic marketplaces, online shopping, Internet advertising, Internet banking, and Internet trading.

Q2-12.**Answer d****Explanation**

The question requires that you use the table to calculate the profit in one (1) month, and the number of pieces produced based on the maximum workload. “Person-days” is a unit of workload. One (1) person-day represents the labor that one (1) person performs in one (1) day.

Profit in one (1) month = (Profit per product) × (Production capacity per month)

Product *A* $200,000 \times 25 = 5,000,000$ yen

Product *B* $160,000 \times 30 = 4,800,000$ yen

Product *C* $90,000 \times 40 = 3,600,000$ yen

From this, the profit in one (1) month can be maximized by producing Product *A*, Product *B*, and Product *C* in that order.

Workload in one (1) month = (Workload per product) × (Production capacity per month)

Product *A* $4 \times 25 = 100$ person-days

Product *B* $4 \times 30 = 120$ person-days

Product *C* $3 \times 40 = 120$ person-days

From this, 340 person-days (100 + 120 + 120 person-days) are required to produce all of the products.

In order to maximize the profit, taking into consideration the maximum workload is 280 person-days, the production capacity for each product is as follows:

Product *A* 25 pieces (100 person-days)

Product *B* 30 pieces (120 person-days)

Product *C* 20 pieces (60 person-days = 280 – 220 person-days)

Therefore, the correct answer is d).

Chapter 3 System strategy**Q3-1.****Answer C****Explanation**

A business process model is a method of summarizing and analyzing how a business works and the business processes (workflow) involved, in order to determine how the work can be performed more efficiently and effectively.

Q3-2.**Answer d****Explanation**

BPR (Business Process Reengineering) is an approach to enhancing business processing capabilities and cost-effectiveness by reforming (reengineering) the workflow (business processes).

Q3-3.**Answer a****Explanation**

BPR (Business Process Reengineering) is the concept of fundamentally reviewing and redesigning corporate activities such as job roles, workflows, administrative functions, and information systems.

Q3-4.**Answer b****Explanation**

SaaS is a service that uses the Internet to supply application functions. SaaS is characterized by the use of a multi-tenant system in which multiple users share a server.

Q3-5.**Answer d****Explanation**

Systematization planning includes development of the overall picture of systematization such as the schedules/framework, scope of work covered, and cost-effectiveness.

Q3-6.**Answer d****Explanation**

The software life cycle refers to the flow of each software process. In general, it flows as follows: “planning process” → “requirements definition process” → “development process” → “operation process” → “maintenance process.” The requirements definition is used to define requirements such as the general description of work and workflow needed for systematization. These are defined after the planning process.

Q3-7.**Answer a****Explanation**

After receiving the inventory allocated, delivery instructions are required in order to remove the product from the shelf.

b): Process of loading the product onto a delivery vehicle.

c): Process of transporting products.

d): Process of regularly verifying the number of products in inventory.

Q3-8.**Answer b****Explanation**

An RFP (Request For Proposal) is a document that an ordering company (company implementing systematization) issues to a supplier (such as a system vendor), in order to request a detailed proposal for basic system policies.

Q3-9.**Answer a****Explanation**

An RFP (Request For Proposal) is a document issued from a company undergoing systems development examination to a system vendor or other party, that requests a detailed proposal for a system. It contains the basic policies of the system such as the system overview, purpose, necessary functions, demands for system requirements, and contractual items.

Q3-10.**Answer b****Explanation**

Information literacy refers to the knowledge and ability to appropriately handle information according to purpose. It refers to the degree to which a person can use information technology such as computers and application software, in order to search for necessary information, and analyze the information for trends.

Chapter 4 Development technology**Q4-1.****Answer a****Explanation**

The requirements definition is most needed by the user departments. It is necessary to investigate and analyze the requirements of user departments, and determine if the requirements are viable for the system targeted for development from a cost/technical perspective.

Q4-2.**Answer C****Explanation**

The function point (FP) method is a method that can be used to estimate the scale of software development. It derives the degree of difficulty for the number of input/output screens, number of files used, and functions to be developed, and converts it into a value for calculating person-hours and costs.

A program step method is used to estimate the number of program steps (lines) for the overall system based on previous results.

Q4-3.**Answer b****Explanation**

Software development is implemented in the order of system design, programming, and testing.

Q4-4.**Answer b****Explanation**

A waterfall model is a software development model for advancing each phase of software development in sequence without returning to a previous phase. Careful checks are implemented at the end of each phase to avoid returning to the previous phase.

Chapter 5 Project management

Q5-1.

Answer b

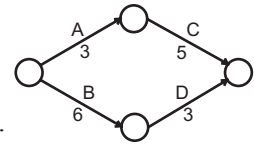
Explanation

The number of days required before reduction is as follows:

Work A (3 days) + Work C (5 days) = 8 days

Work B (6 days) + Work D (3 days) = 9 days

Therefore, the number of days required before reduction is nine (9) days.



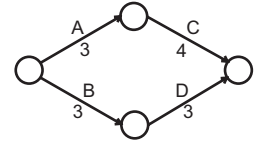
The number of days required after reduction is as follows:

Work A (3 days) + Work C (4 days) = 7 days

Work B (3 days) + Work D (3 days) = 6 days

Therefore, the number of days required after reduction is seven (7) days.

The number of days that can be reduced is two (2) days (= 9 – 7 days).



Q5-2.

Answer a

Explanation

The plan is to complete 25 work items at the end of the fifth day. Since the plan is to complete five (5) work items per day, the delay is one (1) day based on the difference from the number of days it should have taken to finish the work items.

Q5-3.

Answer C

Explanation

The project plan is a document that describes various aspects such as important project matters and the project framework, method of advancing the work, schedule method, and method of management.

Q5-4.

Answer C

Explanation

The workload in one (1) day for each person is as follows:

Workload in one (1) day for Mr. A = $1/24$

Workload in one (1) day for Mr. B = $1/12$

The workload in one (1) day if both persons work together is $3/24$ (= $1/24 + 1/12$).

However, since 25% is subtracted from the workload in one (1) day for preliminary discussion, the workload in one (1) day is $3/32$ (= $3/24 \times 3/4$).

Therefore, the workload by days is as follows:

After one (1) day = $3/32$

After two (2) days = $6/32$

After three (3) days = $9/32$

•
•
•

After 10 days = $30/32$

After 11 days = $33/32$

Therefore, the work will be completed after the 11th day.

Chapter 6 Service management

Q6-1.

Answer b

Explanation

The service level refers to the scope of the quality of IT services that are provided. The quality and scope of the provided IT services is stipulated in the SLA (Service Level Agreement), which is established between the provider of the IT services and the user for operations management based on the agreement. The contents of the SLA includes the scope of system services, pricing, support hours, and recovery time if there is a system failure.

Q6-2.

Answer d

Explanation

A help desk, also called a service desk, is a window for responding to inquiries from users. In general, it receives various inquiries concerning the method for using products and services, troubleshooting methods, requests for repairs of failures, and response to claims and complaints.

Q6-3.

Answer C

Explanation

A service desk is a window for inquiries. If there are multiple windows for inquiries, it is bothersome for users to find the right window. Therefore, it is better to consolidate service desks into a single window.

- a): Similar inquiries and user information can be ascertained through central management of inquiry records.
- b): The role of the service desk is to give out information by publishing frequent inquiries and maintenance information.
- d): The role of the service desk is to receive a wide range of inquiries that concern information systems such as computer failures and claims.

Q6-4.

Answer b

Explanation

A UPS (Uninterruptible Power Supply) provides backup power to prevent interruptions in the supply of power during a power failure or power flicker. If there is a power failure, the UPS supplies power from the battery. However, the length of time it can continuously supply power is typically around 10 to 15 minutes. Therefore, it is necessary to act quickly to save working data and shut down systems.

Q6-5.

Answer a

Explanation

A system audit is performed by a system auditor as an independent third party. It involves comprehensive verification and evaluation of systems, in order to advise about recommendations to the persons concerned. A system audit is implemented in the following order: planning, investigation, and report.

Q6-6.

Answer a

Explanation

The system audit is a comprehensive inspection and evaluation of information systems based on audit standards. The role of the auditor is to advise about recommendations and measures for improvements.

Q6-7.

Answer b

Explanation

Internal control is the mechanism of building a framework so that the company itself can perform its business in a proper way. By dividing the roles of the person who implements work and the person who approves work, it is possible to effectively reduce the risk that illegal or unauthorized acts will occur.

Chapter 7 Basic theory

Q7-1.

Answer d

Explanation

Binary numbers are calculated in the same way as decimal numbers by lining up the digits and calculating them from the last digit. It is important to remember that $1+1=10$ in binary calculation.

$$\begin{array}{r} \text{Carry a 1} \\ \text{Carry a 1} \quad \text{Carry a 1} \\ \quad \quad \quad \text{1 1 1 1} \\ + \quad \quad \text{1 0 1} \\ \hline \text{1 0 1 0 0} \end{array}$$

Q7-2.

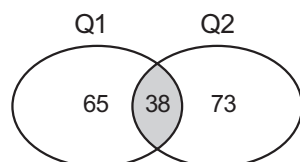
Answer b

Explanation

The number of examinees who answered both questions correctly can be determined based on the number who correctly answered each question.

$(65 \text{ persons correctly answered Q1}) + (73 \text{ persons correctly answered Q2}) = 138 \text{ persons}$

If 100 is subtracted for the number of examinees, the number who correctly answered both questions is 38.



Q7-3.

Answer b

Explanation

a): A, B, and C.

c): A and B.

d): A or B, but not C.

Q7-4.**Answer b****Explanation**

As a 10-bit binary number, it can be expressed as 2^{10} bits (1024 bits).

Q7-5.**Answer C****Explanation**

A stack is an approach that can be used for inserting or deleting data. In a stack, data is inserted at the end of the list, and the last inserted data is deleted.

If the stack is operated in sequence, the order is:

3

4

6

7

5

1

The result of the operations is 3, 7, 1 from the top.

Q7-6.**Answer d****Explanation**

Sorting refers to arranging data in order.

Order after first sorting is finished: 1, 4, 3, 2, 5

Order after second sorting is finished: 1, 3, 2, 4, 5

Order after third sorting is finished: 1, 2, 3, 4, 5

As detailed in procedure 5), when replacement occurs, the procedure is repeated from 1).

Therefore, the sorting is completed on the fourth time.

Q7-7.**Answer d****Explanation**

The communication network independent of node A has six (6) nodes: G, F, I, J, K, L.

Q7-8.**Answer C****Explanation**

A programming language summarizes the rules and syntax for describing processing procedures to computers.

Q7-9.**Answer C****Explanation**

HTML is a language used to create Web pages. It uses control characters called tags to instruct how the page is to be displayed.

Chapter 8 Computer system

Q8-1.

Answer a

Explanation

The control unit and processing unit are at the center of the flow of control for a computer. The main memory is at the center of the flow of data. Therefore, the correct answer is a).

Q8-2.

Answer d

Explanation

Memory broadly refers to a device that is used to store data and programs required for processing in the operation of a computer. All data that is processed by the CPU is exchanged between the CPU and memory.

Q8-3.

Answer d

Explanation

Flash memory is a non-volatile type of rewriteable memory that retains the stored contents after the power is turned off. It is memory that can be rewritten any number of times. An SD card reads and writes data using flash memory, and is used in digital cameras and mobile phones.

Q8-4.

Answer a

Explanation

Bluetooth is an interface that performs data transfer using wireless transmission technology. It is used on devices such as computers, printers, PDAs, and mobile phones.

b): An interface used to connect devices such as a digital video camera or DVD-RAM device.

c): An interface that performs data transfer using infrared communication.

d): A type of flash memory.

Q8-5.

Answer C

Explanation

Peer-to-peer is a network system in which the computers connected to a network share a mutually equal relationship, rather than dividing the roles of the computers.

Q8-6.

Answer d

Explanation

In a client/server system, the server side should perform central management of update processing since many clients execute processing to update databases.

Q8-7.**Answer b****Explanation**

A measure to continue operating a system in the event of a failure is called a fault tolerant. In general, this is achieved by building a duplexed system, and implementing measures to maintain all of the normal functions and continue processing, even in the event of a failure.

Q8-8.**Answer a****Explanation**

The OS is software that manages and controls the hardware and application software.

- b): This refers to a Web browser. Examples include “Internet Explorer”, “Netscape”, and “Firefox.”
- c): This refers to e-mail software. Examples include “Microsoft Outlook”, “Lotus Notes”, and “Eudora.”
- d): This refers to word processing software. Examples include “Microsoft Word” and “Ichitaro.”

Q8-9.**Answer b****Explanation**

In order to specify the file in the directory indicated by an arrow from the directory with the “*,” file “f” in directory B is specified starting from two (2) levels up the hierarchy. Therefore, the correct answer is b).

Q8-10.**Answer a****Explanation**

Backing up is the process of copying files to an auxiliary storage device. It is a precautionary measure against damage to data and programs due to failure of a computer or disk device. Generation management is important when making a backup. It involves storing several generations of backup files from the past. Backup files are needed to recover data, but generation management is useful when data is accidentally overwritten and old data is necessary.

- b): It is a hassle to find available space time, so it lacks in convenience. Also, there is a chance of forgetting where the files are stored.
- c): Backing up files with the same file name causes previous files to be overwritten, which prevents generation management.
- d): Since files are stored on the same hard disk, it prevents recovery if there is a hard disk failure.

Q8-11.**Answer a****Explanation**

A multimedia authoring tool is a piece of software used to create multimedia combining materials such as images, sounds, and characters.

Q8-12.**Answer d****Explanation**

Open source software is software that publishes its source code free of charge, and can be modified or redistributed.

Q8-13.**Answer b****Explanation**

Open source software is a type of software in which the creator has published the source code over the Internet free of charge, enabling anyone to modify or redistribute the software without infringing on copyrights.

Q8-14.**Answer d****Explanation**

A mouse is a device for moving a cursor either by rotating a ball, or using reflected light to specify the direction and distance of cursor movement.

Q8-15.**Answer a****Explanation**

Since the disk spins clockwise, the portion on top (outlined with a dotted line) spins in the following order: 1→6→5→4→3→2→1. If the spotlight is set to flash every five (5) seconds, the numbers are illuminated in the following order: 1→2→3→4→5→6.

Chapter 9 Technology element

Q9-1.**Answer d****Explanation**

A radio button is used to make a single selection from multiple items. When a different item is selected, it automatically deselects the previously selected item.

Q9-2.**Answer d****Explanation**

If there are not too many types of data and the content of the data is fixed, then selecting from a list of options is efficient. This method includes using check boxes, radio buttons, or list boxes.

Q9-3.**Answer b****Explanation**

In creating a Web page, it is important to consider a Web design that is easy to use by anyone.

- a): It is easier to use if the basic screen layout and button placement for each page is unified throughout the website.
- c): The title of the page should be one that users can easily understand.
- d): The destination link should be displayed since automatically switching to a new page could be mistaken as a virus.

Q9-4.**Answer C****Explanation**

JPEG is a file format for the compression and storage of static images. It can handle 24-bit full color (16.77 million colors) data. It is suited for images with many color variations such as photographs, and used as an image format for digital cameras.

Q9-5.**Answer a****Explanation**

A capture card is a device that captures video or television images as digital data.

- b): A device that captures photographs, pictures, printed materials, and handwritten characters as digital data.
- c): A device that uses a microphone or line input to capture audio as digital data, and outputs the audio to a speaker or line output.
- d): A device that uses a coordinate indicator on a flat surface to input design plans or drawings.

Q9-6.**Answer b****Explanation**

Virtual reality is a technology used to create an artificial (virtual) reality by combining computer graphics and sound effects, making it seem as if the user is actually there.

Q9-7.**Answer d****Explanation**

A database is a collection of data organized for a certain purpose. A database management system enables multiple users to collaboratively use a database.

Q9-8.**Answer** **C****Explanation**

A key that specifies a record in a table is called a primary key. Student numbers are assigned to each student. These numbers are unique, making them appropriate for use as primary keys.

Q9-9.**Answer** **C****Explanation**

The member number of the female whose current address and work location are both in Tokyo is "0004."

Q9-10.**Answer** **C****Explanation**

The following items have a sales price of 50,000 yen or more: large refrigerator, medium refrigerator, small refrigerator, air purifier, and air conditioner. Of this list, items with an inventory of less than 10 units are the medium refrigerator, small refrigerator, and air conditioner.

Q9-11.**Answer** **b****Explanation**

When multiple persons concurrently write to a file, only the changes made by the last person are kept. There is a chance that the previous changes will be lost.

Q9-12.**Answer** **b****Explanation**

A LAN is a network for exchanging information within a relatively confined area such as within a single building, site, plant, or school.

Q9-13.**Answer** **d****Explanation**

A protocol is a set of rules determined for data communications between computers over a network.

Q9-14.**Answer** **b****Explanation**

A URL is used to specify the location of information sources (resources) on the Internet. The URL specifies the protocol for receiving a Web page, and is written using a specific format that indicates the host name and domain name of the Web page.

Q9-15.**Answer d****Explanation**

Specifying “cc” when sending an e-mail displays the e-mail addresses of the recipients so that they know who else the message was sent to. Specifying “bcc” hides the e-mail addresses from recipients so that they do not know who else the message was sent to.

Q9-16.**Answer b****Explanation**

A “mailing list” can be used to communicate with multiple persons via e-mail. By sending an e-mail to the specified address, multiple copies can be sent out to all of the members on the mailing list.

Q9-17.**Answer d****Explanation**

Social engineering refers to the act of obtaining important information through physical and personal means, in order to use the information for fraudulent purposes.

Q9-18.**Answer C****Explanation**

An information security policy explicitly describes the basic security policy of an organization in order to implement consistent information security measures throughout the organization. In addition to technical measures for information security, it addresses the usage and operation of systems, and the organizational approach and its integration.

Q9-19.**Answer b****Explanation**

It is best to set a password that is difficult for others to guess, and to regularly change the password.

Q9-20.**Answer b****Explanation**

If a user forgets his password, rather than telling the user the stored password, the old password should be initialized and the user should reset the password on his own.

Q9-21.**Answer b****Explanation**

Antivirus software is software with functions to check for computer virus infections, and remove computer viruses if infected. Antivirus software uses a virus definition file to detect viruses, so it is necessary to update to the latest virus definition file.

Practice exam 1 answers

Q1.

Section 1-2 Legal affairs

Answer d

Explanation

If used within the scope covered by the license agreement, then it does not violate the Copyright Act.

Q2.

Section 2-1 Business strategy management

Answer d

Explanation

SWOT analysis is an analysis technique used for planning corporate strategies. The “S” stands for strengths, and “W” for weaknesses.

Q3.

Section 1-1 Corporate activities

Answer a

Explanation

CSR (Corporate Social Responsibility) refers to the responsibilities that a corporations should fulfill to society. Many corporations publish their CSR approach through their Web page or publish a CSR report in order to earn the confidence of stakeholders.

Q4.

Section 2-1 Business strategy management

Answer a

Explanation

The star of PPM is a product that requires investment with growth, but offers a high market growth rate and market share.

- b): Describes a dog.
- c): Describes a question mark.
- d): Describes a cash cow.

Q5.

Section 1-2 Legal affairs

Answer b

Explanation

- a): Under a dispatch contract, the client company has the right to issue instructions to the dispatch employee, but matters concerning the dispatch contract such as paid leave and overtime must be cleared first with the dispatching company.
- c): Even if erroneous entry of data into a product management system leads to the production of defective goods, the right to issue instructions lies with the client company. Therefore, the client company cannot blame the responsibility for the manufactured goods on the dispatching company.
- d): Instructing an employee to work overtime as if the person were an employee of the client company is a matter that concerns the dispatch contract, so the client company must obtain the approval of the dispatching company.

Q6.

Section 1-1 Corporate activities

Answer b**Explanation**

Information is essential for a corporation to make correct decisions and stay competitive. By using information skillfully, corporations can improve productivity, enhance added value, and generate ideas that lead to viable business plans.

Q7.

Section 3-1 System strategy

Answer d**Explanation**

Groupware is software that aims to raise work efficiency by using workflow functions and communication functions such as electronic conferencing and e-mail that support collaborative work between people in a workplace.

- a): A system that supports design work, which includes creating drawings and drafting plans for buildings and machinery.
- b): A system for integrated management of the flow of distribution from materials ordering and procurement to inventory management and product delivery.
- c): An artificial intelligence system that makes predictions based on a database of knowledge and experience that focuses on a specialized field.

Q8.

Section 2-3 Business industry

Answer d**Explanation**

Electronic commerce is an electronic form of commerce. BtoC is an abbreviation for “Business to Consumer” and refers to transactions between companies and consumers. Transactions can take place through virtual malls for activities such as Internet shopping and online trading.

- a): A framework that aims to reduce costs and accelerate processing by sharing information for commercial transactions between the order receiving and ordering parties.
- b): A framework for exchanging electronic data related to commercial transactions between companies by using the Web.

Q9.

Section 1-2 Legal affairs

Answer d**Explanation**

The company may have a license, but it does not extend to the subsidiary of the company. Copying the program without permission infringes on the right of reproduction.

Q10.

Section 3-2 System planning

Answer b**Explanation**

An RFI (Request For Information) is a document that precedes the RFP (Request For Proposal), and is issued to a supplier such as a systems vendor to request information for computerization. It can be used to gather a wide variety of information such as technical information on hardware and software required for systematization, examples of systems built for other companies in the same industry, and information concerning operations and maintenance.

Q11.

Section 3-1 System strategy

Answer a**Explanation**

For corporate activities that involve designing and planning computerization, it is necessary to clarify the effectiveness and return on investment of installing the system.

- b): If the system is the same as that of another company, it may not be suitable for the company.
- c): There is no need to select specific administrators and managers at the design and planning stages.
- d): Using the company's employees for development is not a problem, but it depends on the existing policy, and does not always need to be considered.

Q12.

Section 2-1 Business strategy management

Answer a**Explanation**

The highest decision-making authority of a Japanese stock company is the stockholders' meeting. The stockholders' meeting decides on the business policy of the company, and appoints the directors and auditors. Since the decisions are by majority rule, they are dependent on institutions and investors who hold a majority of stocks in the company. The board of directors is below the stockholders' meeting in the organization.

Q13.

Section 1-1 Corporate activities

Answer a**Explanation**

A Pareto chart uses both a bar graph and line graph to show data organized by the type of defective products that have occurred, and the cause of occurrence. The bars show the degree to which defective products have occurred by cause of occurrence in ascending order of the percentage of occurrence, while the line shows the cumulative totals.

Q14.

Section 1-2 Legal affairs

Answer C**Explanation**

Personal information that is protected under the Act on the Protection of Personal Information includes names, date of birth, gender, phone numbers, and personal photographs that can be used to identify a specific individual. Names and phone numbers of companies that are published on Web pages are information for an organization, and are not considered personal information.

Q15.

Section 2-1 Business strategy management

Answer d**Explanation**

A POS system is a distribution information system for managing information at the point of sales. It collects, stores, and analyzes sales information for each product and unit by recording information at the retail point of sale such as a chain store.

Q16.

Section 3-1 System strategy

Answer d**Explanation**

An E-R diagram expresses the association between entities by using a diagram that expresses the relationships between data based on entities and relationships.

Q17.

Section 1-1 Corporate activities

Answer b**Explanation**

An income statement describes business results for a specific time period. It provides insight into a corporation's business performance by breaking down the income and expenses, and calculating the profit or loss. Also referred to as a P/L (Profit and Loss) statement.

Q18.

Section 1-2 Legal affairs

Answer a**Explanation**

In a service contract, the employee performs work under the instruction of the employer, even if working out of the office of the client. This differs from dispatching in terms of who issues the instructions. In dispatching, the dispatched person performs work under the instruction of the client.

Q19.

Section 3-2 System planning

Answer C**Explanation**

The client issues purchase order (A) in response to the quotation from Company X. After Company X receives the order, it issues order confirmation (B) and delivers the products to the customer. After confirming that the products have been delivered, the client issues inspection sheet (C), and Company X issues invoice (D) to the client.

Q20.

Section 1-1 Corporate activities

Answer a**Explanation**

The expected number of visitors is calculated by multiplying the number of visitors expected by the chance of each type of weather, and adding them up.

The expected number of visitors for each venue is calculated as follows:

Venue A: $(30 \times 0.5) + (15 \times 0.3) + (10 \times 0.2) = 21.5$

Venue B: $(20 \times 0.5) + (30 \times 0.3) + (5 \times 0.2) = 20$

Venue C: $(15 \times 0.5) + (20 \times 0.3) + (15 \times 0.2) = 16.5$

Venue D: $(25 \times 0.5) + (15 \times 0.3) + (10 \times 0.2) = 19$

Therefore, Venue A can be expected to draw the most number of visitors.

Q21.

Section 2-3 Business industry

Answer a**Explanation**

An information appliance is a consumer electronics product that is used to connect to a network or the Internet.

Q22.

Section 2-2 Technological strategy management

Answer b**Explanation**

MRP (Material Requirements Planning) calculates the total amount of components that need to be produced for products scheduled to be manufactured. The total amount of components is compared against the amount in inventory to derive the optimum amount of components to order. Therefore, the inventory status is necessary in order to calculate the shortage amount.

Q23.

Section 1-2 Legal affairs

Answer a**Explanation**

As a rule, the copyright to a program developed while working under the instruction of a company, belongs to the company. Therefore, the copyright to a program developed while working for the client company, belongs to the client company.

Q24.

Section 2-1 Business strategy management

Answer d**Explanation**

Attaching RFID tags to products and other items enables information to be read wirelessly, which simplifies product identification and management. Therefore, library books with RFID tags can be processed automatically when borrowed by using an automated lending machine to read the information.

Q25.

Section 2-1 Business strategy management

Answer b**Explanation**

A product life cycle refers to the cycle from the release of a product until sale of the product ends and disappears from the market. This life cycle is divided into the four (4) stages of introduction, growth, maturity, and decline to maximize profits at each stage.

Q26.

Section 1-2 Legal affairs

Answer C**Explanation**

- a): Describes the ISO (International Organization for Standardization).
- b): Describes the IEEE (Institute of Electrical and Electronics Engineers).
- c): Describes the ANSI (American National Standards Institute).
- d): Describes the ITU-T (International Telecommunication Union-Telecommunication sector).

Q27.

Section 1-2 Legal affairs

Answer d**Explanation**

“Obey a separate chain of command from the employment relationship” refers to obeying instructions from a separate organization than the organization that the worker is assigned to. Therefore, the correct answer is d). In the other forms of employment, the worker obeys instructions from the organization that the worker is assigned to.

Q28.

Section 1-1 Corporate activities

Answer b**Explanation**

In comparing the graphs, Company *X* has more fixed costs and fewer variable costs, and fewer costs against sales when the break-even point is exceeded. Therefore, Company *X* will generate more profits than Company *Y*.

Q29.

Section 3-1 System strategy

Answer d**Explanation**

By modeling business processes, business activities can be correctly identified, enabling current business activities to be sorted. Methods of modeling business processes include E-R diagrams, DFD, and UML.

Q30.

Section 3-1 System strategy

Answer a**Explanation**

Outsourcing is a form of entrusting work to a specialized third party, covering all systems development and operations/maintenance, or most of these functions. Outsourcing can be used to lower the cost of systems development.

Q31.

Section 1-2 Legal affairs

Answer C**Explanation**

Under *JIS Q9000:2000 (ISO 9000:2000) – Quality Management Systems: Fundamentals and Vocabulary*, a third party audit is defined as being “executed by an outside, independent organization.” This auditing body is required to “verify the conformity against the requirements of JIS Q9001 and JIS Q14001, and engage in examination and registration.” When a company wishes to receive an audit of the quality management system, the company requests the audit to an outside examination and registration body that is unrelated to the stockholders’ meeting or board of directors.

Q32.

Section 3-1 System strategy

Answer C**Explanation**

Chat is a tool that facilitates communication by enabling multiple participants to converse between themselves in real time using text. As text is entered, it appears on the screens of the computers, allowing all participants to read the full content.

Q33.

Section 1-1 Corporate activities

Answer C**Explanation**

The required net sales is calculated using the following formula: $(\text{Fixed costs} + \text{Target profit}) \div (1 - \text{Variable costs})$.

Variable cost ratio: $(50,000,000 \text{ yen variable costs}) \div (100,000,000 \text{ yen net sales}) = 0.5$

Therefore, the required net sales is calculated using the following formula:

Required net sales: $(30,000,000 \text{ yen} + 18,000,000 \text{ yen}) \div (1 - 0.5) = 48,000,000 \text{ yen} \div 0.5 = 96,000,000 \text{ yen}$

Q34.

Section 2-3 Business industry

Answer C**Explanation**

- a): Describes OR (Operations Research).
- b): Describes brainstorming.
- d): Describes a histogram.

Q35.

Section 1-1 Corporate activities

Answer C**Explanation**

Accounting records only record transactions in which an actual financial transaction occurs. Leases, employment contracts, and product orders are transactions in the eyes of the law and in common language, but they are not considered bookkeeping transactions. Damage to assets due to fire or theft is not a transaction in the eyes of the law, but is considered a bookkeeping transaction.

Q36.

Section 4-2 Software development management techniques

Answer a**Explanation**

- b): Describes the program step method.
- c): Describes the spiral model.
- d): Describes the declining balance method for depreciation.

Q37.

Section 6-1 Service management

Answer a**Explanation**

ITIL (Information Technology Infrastructure Library) is a framework that encompasses know-how for the success of a business that employs IT services, and the best methods and practices. It is used as a de facto standard for IT service management.

Q38.

Section 4-1 System development technology

Answer b**Explanation**

A white box test focuses on the program control and flow to check the internal structure and logic of the program.

- a): Equivalence partitioning is a method for generating test data for a black box test.
- c): Functions and testing are unrelated.
- d): Program input and output is a focus of the black box test.

Q39.

Section 6-1 Service management

Answer d**Explanation**

IT service management at the core of ITIL is comprised of service support and service delivery. Service support covers guidelines for the daily operation and support of IT services. Service delivery covers guidelines for medium- and long-term planning and improvement of IT services.

Q40.

Section 4-1 System development technology

Answer d**Explanation**

A system is designed in the following sequence: System architecture design (external design) → Software architecture design (internal design) → Software detailed design (program design).

Q41.

Section 4-2 Software development management techniques

Answer d**Explanation**

A prototyping model is a development model that produces a prototype at the early stages of systems development, and receives feedback from users (system user departments) during development. It enables system developers to verify the requirements of users (system user departments) at an early stage, making it possible to develop a system based on mutual understanding.

Q42.

Section 5-1 Project management

Answer b**Explanation**

PMBOK is global standard framework (body of knowledge) for project management, advocated by the U.S.-based Project Management Institute (PMI). It summarizes the basic approach and procedures for project implementation.

Q43.

Section 6-2 System audit

Answer d**Explanation**

A COSO framework is a global standard for internal control, and is made up of six (6) basic elements that are needed to achieve the purpose of internal control. The six (6) basic elements are: (1) Control environment, (2) Risk evaluation and response, (3) Control activities, (4) Information and communication, (5) Monitoring, and (6) Response to IT.

Q44.

Section 5-1 Project management

Answer b**Explanation**

A milestone is a term used in project management that describes an important point in a schedule.

Q45.

Section 6-1 Service management

Answer C**Explanation**

The SLA (Service Level Agreement) stipulates the quality and scope of IT services provided to the client. It originally spread as a form of contract for telecommunications providers to provide assurances of the communications quality of network services. It describes the standards for the minimum speed of actual data transfer and the maximum failure time if there is a fault, and stipulates the penalties and compensation if the standards are not met.

Q46.

Section 4-2 Software development management techniques

Answer b**Explanation**

A common framework for systems development unifies the terminology and standardizes the content of work in planning, development, operations, and maintenance. By sharing a common framework, the content of transactions such as mutual roles, scope of work, content of work, and scope of responsibilities can be clarified, enabling the system vendor and user to reach a mutual understanding.

Q47.

Section 4-1 System development technology

Answer C**Explanation**

A system requirements definition investigates and analyzes the requirements of users (system user departments) to determine if computerization is technically viable, and defines the requirements aimed at achieving computerization in detail.

Q48.

Section 6-1 Service management

Answer d**Explanation**

Facility management is an approach to maintaining and protecting information systems such as computers, networks, facilities, and equipment, in order to keep them in a more optimal state.

Q49.

Section 6-1 Service management

Answer C**Explanation**

SLM (Service Level Management) is a method of management for maintaining and improving the service level by measuring whether the service level in the agreement is being met.

Q50.

Section 5-1 Project management

Answer a**Explanation**

A project is designed to execute activities in order to fulfill a purpose within a specified time. Activities that are implemented by specific departments, or without a deadline, do not fall under the scope of a project.

Q51.

Section 4-1 System development technology

Answer C**Explanation**

A testing method for verifying that functions are executed according to the design document is called a black box test. In a black box test, the black box represents the functions, and testing focused on output results for input data is carried out.

Q52.

Section 4-1 System development technology

Answer a**Explanation**

When changing a system that is currently live, it is always necessary to perform testing under the same environment as the production environment. It is also necessary to perform operational testing to sufficiently verify whether the added program has an impact on other programs before deciding to go live.

Q53.

Section 4-1 System development technology

Answer b**Explanation**

A black box test determines if a program is functioning correctly based only on input and output of data, without focusing on the internal structure of the program. Boundary value analysis is one of the methods for preparing test data in a black box test. Boundary value analysis uses the boundary value for the valid and invalid scope of data as the test data. Here, the valid scope of data is from 1 to 49, while the invalid scope of data is 0 or below and 50 or above. Since the lower boundary is 0 and 1, and the upper boundary is 49 and 50, the test data must at the very least include these four (4) numbers. Therefore, the correct answer is b).

Q54.

Section 5-1 Project management

Answer b**Explanation**

Since 30% of the program requires changing and the number of lines that can be changed in a single day is 0.25 lines, the required workload (person-days) is calculated using the following formula:

$$3,000 \text{ lines} \times 30\% = 900 \text{ lines}$$

$$900 \text{ lines} \div 0.25 \text{ lines} = 3,600 \text{ days}$$

Furthermore, since one (1) person-month covers 20 days, the required workload (person-months) is calculated using the following formula:

$$3,600 \text{ days} \div 20 \text{ days} = 180 \text{ person-months}$$

Q55.

Section 4-1 System development technology

Answer a**Explanation**

A bug control chart is used to graph the relationship between the test time and cumulative number of detected bugs (errors).

The aim is to achieve zero incomplete test items and unresolved bugs. However, as time passes, the number of unresolved bugs levels off after a certain point, and shows no sign of further decline. This indicates that testing has stopped making progress. Furthermore, since the number of bugs detected levels off after a certain point, it indicates that there are bugs that are difficult to resolve, and no progress is being made with testing.

Q56.

Section 5-1 Project management

Answer a**Explanation**

The scope describes the range of work required to produce the final deliverables. For the success of the project, it is important to define the scope beforehand in a thorough manner.

Q57.

Section 9-5 Security

Answer d**Explanation**

Upper management should make an effort to provide employees with an explanation of the company's approach and initiatives for the information security policy.

Q58.

Section 8-3 Software

Answer b**Explanation**

The net sales for the next fiscal year is calculated by multiplying the sales in the current fiscal year for each market by the market growth rate plus one (1). When the formula is entered in cell C4, it is copied to cells C5 and C6, so the reference to the market growth rate must be fixed to the first column. Therefore, the correct answer is $=B4*(1+B\$1)$ in b).

Q59.

Section 9-2 Multimedia

Answer C**Explanation**

The JPEG file format reflects all of the characteristics.

JPEG is a file format for the compression and storage of static images. It can handle 24-bit full color (16,770,000 colors) data, making it suitable for images with many color variations such as photographs.

- a): The BMP format is a file format for static images, but does not employ compression, in contrast with characteristic (4).
- b): The GIF format is a file format for the compression and storage of static images, but can only handle 8-bit color (256 colors) data. This does not make it suitable for images with natural color such as photographs, and contrasts with characteristic (2). Furthermore, GIF compression is fully reversible to restore the original static image, in contrast with characteristic (4).
- d): The MPEG format is a file format for the compression and storage of video images, in contrast with characteristic (1).

Q60.

Section 8-4 Hardware

Answer d**Explanation**

The number of pages that can be printed per minute is called ppm. It is used as a unit to indicate the printing speed of a page printer.

Q61.

Section 8-1 Computer component

Answer a**Explanation**

Cache memory is a type of memory used to speed up data transfer. Data is read from the main memory and stored in the cache memory, which offers fast access speeds to speed up data transfer.

Q62.

Section 8-3 Software

Answer C**Explanation**

The statement “when at least one (1) of the processing units must operate normally” indicates the same availability as if the processing units are connected in parallel. The overall availability factor is calculated as follows:

$$1 - (1 - 0.9) \times (1 - 0.9) = 0.99$$

The statement “when both processing units must operate normally” indicates the same availability as if the processing units are connected in series. The availability factor for both processing units is calculated as follows:

$$0.9 \times 0.9 = 0.81$$

Therefore, the difference in the availability factor is:

$$0.99 - 0.81 = 0.18$$

Q63.

Section 8-4 Hardware

Answer b**Explanation**

An OLED (Organic Light-Emitting Diode) display is a display device that emits light when voltage is applied, and is characterized by low voltage drive and low power consumption. It uses luminescent organic molecules such as diamine and anthracene.

- a): Describes an LCD display.
- c): Describes a screensaver.
- d): Describes a CRT display.

Q64.

Section 7-2 Algorithms and programming

Answer a**Explanation**

If m is equal to zero (0), then it can be divided by two (2) and is an even number.

Q65.

Section 9-3 Database

Answer C**Explanation**

A database backup file is made by copying the database contents at a given point in time, and storing the file in order to enable recovery of the database.

Q66.

Section 9-4 Network

Answer a**Explanation**

IPv6 (Internet Protocol version 6) is a next generation version of IPv4 that is currently in wide use. IPv6 manages a larger address space of 128 bits, compared with 32 bits for IPv4, to address the shortage of available IP addresses caused by the rapid spread of the Internet.

Q67.

Section 7-2 Algorithms and programming

Answer a**Explanation**

JavaScript is a program that is directly described within an HTML file, and is executed by a browser.

Q68.

Section 8-2 System component

Answer b**Explanation**

A client/server system performs processing by dividing the roles of the computer that requests processing (client), and the computer that executes the processing based on the request (server). In a peer to peer system, the roles of computers are not divided, and the computers are connected to share a mutually equal relationship for the mutual use of data.

Q69.

Section 9-5 Security

Answer a**Explanation**

The first step to take when there is a computer virus infection is to sever the infected personal computer from the network. Severing it minimizes the impact on other personal computers.

Q70.

Section 8-1 Computer component

Answer C**Explanation**

The number of disk sectors is 512×2^{28} bytes. Since 512×2^{21} equals one (1) gigabyte, the maximum number of gigabytes that can be managed on the disk is 2^7 disk sectors.

$$\begin{aligned}(512 \times 2^{28}) \div (512 \times 2^{21}) &= 2^{28} \div 2^{21} \\ &= 2^{(28-21)} \\ &= 2^7\end{aligned}$$

Therefore, $2^7 = 128$ gigabytes.

Q71.

Section 8-4 Hardware

Answer d**Explanation**

A touch panel is an input device that is a pointing device. A touch panel is a device that inputs data by pressing fingers against icons or buttons shown on the display.

Q72.

Section 8-2 System component

Answer a**Explanation**

TCO (Total Cost of Ownership) represents all necessary costs from the time of purchase to the time of disposal of a system. TCO encompasses all costs including the purchase cost for computer hardware and software, training costs for users, operational costs, system maintenance costs, and cost of losses due to system failures. When installing a system, it is important to consider the continuous return on investment based on the TCO.

Q73.

Section 9-4 Network

Answer a**Explanation**

MIME is a protocol for extending data formats that can be sent and received by e-mail. It enables the attachment of files such as images, and audio files, where before only single-byte character code text formats could be handled.

b): SMTP is a protocol for sending e-mail.

c): The portion of the e-mail address before the "@" sign can be set as desired, as long as it is not duplicated with the same provider.

d): DHCP is a function for automatically assigning unused IP addresses to connected clients on a TCP/IP-based network.

Q74.

Section 9-5 Security

Answer b**Explanation**

Computer antivirus software detects viruses by comparing with pattern files that keep a record of viruses and their characteristics. A signature code is a code that describes the characteristics of a virus.

Q75.

Section 8-1 Computer component

Answer C**Explanation**

Based on the conditions, the required file backup functions are for a storage media with a large capacity and fast speed, making it suitable for a hard disk (HD).

- a): The storage capacity of a CD-R is 650 to 700MB, and is not rewritable.
- b): The storage capacity of a DVD-R is up to 17GB, and is not rewritable.
- d): The storage capacity of an MO is up to 2.3GB, and writing is slow.

Q76.

Section 7-2 Algorithms and programming

Answer a**Explanation**

Under interpreted language processing, the source program is executed by translating one (1) instruction at a time into machine language. The speed of execution is slower than compiled language processing, where the source program is translated into an executable machine language all at once.

Q77.

Section 8-3 Software

Answer a**Explanation**

When a Web page is viewed, the Web browser specifies the URL. By specifying a URL, it is possible to access a Web server and freely view a Web page.

Q78.

Section 7-2 Algorithms and programming

Answer d**Explanation**

The rounded rectangle indicates the start and end of a flowchart.

Q79.

Section 7-2 Algorithms and programming

Answer b**Explanation**

A data structure used in programming can be either an array or list. An array is a data structure with the same format as a determinant used in mathematics (which resembles a table). When reading data, a subscript is used to specify the position.

- a): The data structure is separate from the algorithm, but it is not determined by arrays.
- c): The list calls data for the next position indicated by the list, but it is not determined by subscripts.
- d): Lists provide a function to indicate the position of the next data, so there is no need to move data.

Q80.

Section 9-5 Security

Answer b**Explanation**

Fingerprint authentication is an authentication method that performs matching from either fingerprint patterns or features used to identify between fingerprint patterns.

- a): Iris authentication uses the pattern of circular lining that adjusts the contraction and dilation of the pupil.
- c): Voiceprint authentication uses the wave pattern of voice data.
- d): Retina authentication uses the pattern of capillary vessels at the back of the eyeball.

Q81.

Section 9-5 Security

Answer d**Explanation**

Firewall, the point of connection between company networks and the Internet, is equipped with a packet filtering function that prevents unauthorized access.

Q82.

Section 9-1 Human interface

Answer C**Explanation**

Using images is an effective way to make the content of a Web page visually appealing, but if high quality (large) images are used, the Web page can be slow to display when accessed through slower mobile communications. Therefore, it is important to minimize the use of images in order to achieve operability that does not inconvenience users.

Q83.

Section 8-3 Software

Answer a

Linux is an example of open source software in which the creator publishes the source code over the Internet, allowing anyone to modify or redistribute the software without infringing on copyrights.

Q84.

Section 9-1 Human interface

Answer d

Information accessibility refers to removing barriers that obstruct the elderly and persons with disabilities from using telecommunications equipment. Examples include the use of text-to-speech software to read information to persons with visual impairments, and enabling persons with hand impairments to input information without using a mouse or keyboard.

- a): Describes a ubiquitous computing environment.
- b): Describes a teleworking environment.
- c): Describes a mobile computing environment.

Q85.

Section 7-2 Algorithms and programming

Answer b

HTML is a language protocol that uses control symbols called tags for markup of hypertext.

Q86.

Section 8-4 Hardware

Answer a

Resolution refers to the number of horizontal and vertical dots that can be displayed on a screen, and expresses the screen display resolution. The greater the resolution, the larger the amount of information that can be displayed, and the smaller the text and images.

Q87.

Section 7-1 Basic theory

Answer a

An analog signal is expressed as continuous data, in contrast with a digital signal that is expressed as separate interrupted data. During A/D conversion, increasing the sampling frequency increases the quantization value, which gets closer to the waveform of an analog signal and improves sound quality production. However, it is not possible to completely reproduce the waveform of an analog signal, as it is an A/D conversion that takes place.

Q88.

Section 8-2 System component

Answer C

A blade server is a thin server that enables multiple servers to be mounted on a rack, so that large amounts of data can be processed while taking up less space and packing more servers in the same space.

- a): Describes a supercomputer.
- b): Describes a database server.
- d): Describes a DNS server.

Q89.

Section 9-3 Database

Answer b

In order to calculate the monthly sales performance by product, the sales_date, product_name, and sales_amount are required at the very least.

- a): The monthly calculation cannot be performed with only the product_name and sales_amount.
- c): The category is unnecessary for the sales performance by product.
- d): The unit_price is unnecessary, since it is determined by the product.

Q90.

Section 9-3 Database

Answer C

The most efficient method is to extract and sort the target data, and calculate the total sales.

Q91.

Section 9-3 Database

Answer d

The rate of increase based on the sales performance for the last month and two (2) months ago is calculated by taking the difference between the sales performance last month and two (2) months ago, and dividing it by the sales performance two (2) months ago.

Q92.

Section 9-3 Database

Answer b

As in Q90, it is efficient to extract and sort the data, and calculate the total sales. However, since the total sales is by state, the member number is needed as a key that links to the member ledger.

Q93.

Section 7-1 Basic theory

Answer b

The number of postcards needed for the vehicle inspection discount promotion is calculated using the “logical sum.” The logical sum is the union set, so the formula is “A+B.”

Q94.

Section 7-1 Basic theory

Answer C

All customers of both passenger cars and mini-cars are included. To calculate the number using the logical sum, the customers in both lists are merged into one list, so the correct number is six (6) customers.

Q95.

Section 7-1 Basic theory

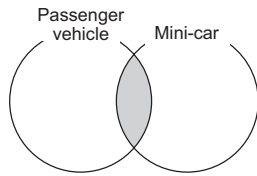
Answer a

The new vehicle discount promotion is for customers who purchased a passenger vehicle excluding mini-cars, so the correct answer is a).

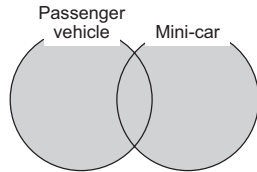
- b): Passenger vehicle and mini-car.
- c): Mini-car excluding passenger vehicle.
- d): Passenger vehicle other than mini-car, or mini-car other than passenger vehicle.

Answer b

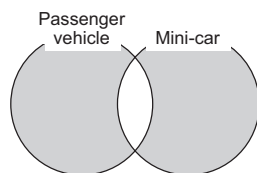
A truth table is a table indicating logical combinations. One is true and zero (0) is false. b) indicates the logical product, and is expressed in a Venn diagram as follows:



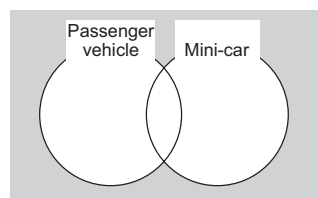
a): The truth table indicates the logical sum, and is expressed in a Venn diagram as follows:



c): The truth table indicates the exclusive logical sum. For the exclusive logical sum, if one value is 1 (truth) and the other value is 0 (false), it indicates 1 (truth), but if both values are the same, it indicates 0 (false). This is expressed in a Venn diagram as follows:



d): The truth table indicates the negative logical sum. For the negative logical sum, if either value is 1 (truth), it indicates 0 (false), but if both values are 0 (false), it indicates 1 (truth). This is expressed in a Venn diagram as follows:

**Answer C**

The interdependency of the work is determined using the arrow diagram.

- a): Data conversion (*D2*) cannot be started until data extraction (*D1*) is completed.
- b): Customization of application software (*S3*) cannot be started until installation of application software (*S2*) is completed.
- d): Installation of application software (*S2*) is performed after building of the hardware environment (*H2*) is completed.

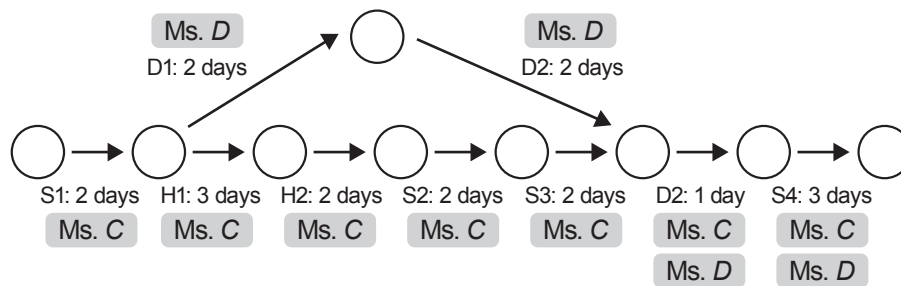
Answer C

The number of days required to perform the applicable work is calculated using the “Table: List of work necessary for version upgrade.”

Work No.	Description	Work days
S1	System backup	2
D1	Data extraction	2
D2	Data conversion	2
H1	Hardware procurement	2
H2	Build hardware environment	2
S2	Install application software	1
S3	Customize application software	2
D3	Load data	1
S4	Operational test	3
Total		17

Answer C

Use the arrow diagrams to clarify the work and number of days required for work for Ms. C and Ms. D.



The number of days required for work performed only by Ms. C is: 2 days (S1) + 3 days (H1) + 2 days (H2) + 2 days (S2) + 2 days (S3) = 11 days.

The number of days required for work performed only by Ms. D is: 2 days (D1) + 2 days (D2) = 4 days. However, since Ms. D performs the work concurrently with Ms. C, the number of days is not used in the calculation.

In addition, the number of days required for work performed together by Ms. C and Ms. D is: 0.5 days (D3) + 1.5 days (S4) = 2 days.

Therefore, the number of days required for the work is 11+2=13 days.

Answer b

An operational test uses actual data to verify that the system matches the actual business conditions. The system user department plays a central role in performing the operational test.

Practice exam 2 answers

Q1.

Section 1-1 Corporate activities

Answer C

Explanation

A project is an activity carried out to achieve a specific purpose within a specific period of time. Experts from different departments are brought together for the implementation. A project organization is a temporary and flexible organization comprised of experts who implement the project.

Q2.

Section 2-1 Business strategy management

Answer a

Explanation

In order to achieve the corporate management purpose of business continuity and growth, a company must adapt to changes in the social environment and prevail against its competitors. A business strategy provides the necessary perspective for this purpose.

Q3.

Section 1-1 Corporate activities

Answer d

Explanation

PDCA involves the repetition of the Plan→Do→Check→Action cycle in order to make improvements. “Plan” refers to self-analysis and self-organization, “Do” refers to preparing entry sheets, resumes, etc. and carrying out interviews, “Check” refers to reflecting on whether things went as planned and if not why, and “Action” refers to what is done to solve the problems after reflecting on the results.

Q4.

Section 2-1 Business strategy management

Answer b

Explanation

Customer satisfaction refers to the perspective of a customer after purchasing a product or service, and whether the customer is satisfied with the purchase. The higher the satisfaction, the higher the number of regular and repeat customers, which ultimately results in better business.

Q5.

Section 3-1 System strategy

Answer d

Explanation

During system development, it is important for a technology strategy to utilize cutting-edge technology. Items for considerations include what to do when a project is unable to support the technology.

Q6.

Section 1-1 Corporate activities

Answer b**Explanation**

When using a scatter diagram, two (2) attribute values are used, one for the vertical axis and another for the horizontal axis, so the correlative relationship between two (2) types of data can be shown. To analyze the cause-effect relationship between low ozone layer concentration and increased amounts of ultraviolet rays, a scatter diagram is the most suitable.

Q7.

Section 2-1 Business strategy management

Answer b**Explanation**

A SWOT analysis is a method of analysis for formulating a business strategy or enterprise strategy. It analyzes the capabilities of a company based on the four (4) points of Strengths, Weaknesses, Opportunities, and Threats. It is used when planning and drafting a business strategy or enterprise strategy.

Q8.

Section 2-3 Business industry

Answer a**Explanation**

A POS system is a distribution information system for recording sales information at the time a product is sold, and collecting, compiling, and analyzing sales information by individual product. It can be used at restaurants, department stores, shopping centers, and other retail businesses, but cannot manage data related to raw materials or distribution.

Q9.

Section 1-2 Legal affairs

Answer d**Explanation**

It is not an infringement as long as the use is within the scope of the license.

- a): Photographs, illustrations and characters are protected by copyright laws. Drawing these by hand is also prohibited.
- b): This is also prohibited under current law.
- c): Logos are protected by trademark rights, and using the same or similar logos or names is prohibited.

Q10.

Section 3-2 System planning

Answer C**Explanation**

In the computerization planning stage, the development schedule and system development structure are reviewed, and the possible risks related to development of the system are analyzed.

Q11.

Section 3-1 System strategy

Answer b**Explanation**

An information systems strategy involves computerizing current business activities, and planning improvement of business efficiency in the medium and long term. It is important to carefully consider the effectiveness of introducing the system and the investment effect when planning the implementation.

Q12.

Section 2-1 Business strategy management

Answer C**Explanation**

SFA contact management involves managing the history of contact with customers to engage in efficient sales activities.

Q13.

Section 1-1 Corporate activities

Answer C**Explanation**

The association diagram method is a method of connecting causes and effects or goals and methods, to express the relationship between them and explain the structure of problems.

Q14.

Section 1-1 Corporate activities

Answer b**Explanation**

The first-in first-out method is a system of paying for products in the order in which they were purchased.

Out of the 3,000 units paid for on the 10th of April, 2,000 are carried over from the previous month, so the amount is as follows:

$$2,000 \times 100 \text{ yen} = 200,000 \text{ yen}$$

The remaining 1,000 will be paid out of the portion purchased on April 5, so the amount will be as follows:

$$1,000 \times 130 \text{ yen} = 130,000 \text{ yen}$$

Therefore, the total amount is as follows:

$$200,000 \text{ yen} + 130,000 \text{ yen} = 330,000 \text{ yen}$$

This is divided by the 3,000 units paid, and the issue price will then be as follows:

$$330,000 \text{ yen} \div 3,000 = 110 \text{ yen}$$

Q15.

Section 2-1 Business strategy management

Answer a**Explanation**

SCM has the effect of reducing surplus stock and lowering distribution costs as a result of managing everything from orders and material procurement to inventory control and product shipments in an integrated fashion using computers and the Internet.

Q16.

Section 1-1 Corporate activities

Answer a**Explanation**

A fixed cost is an expense that is incurred regardless of sales. Examples include equipment and personnel costs. Sales fees, product shipping costs, and other costs that correspond to sales are variable costs.

Q17.

Section 1-1 Corporate activities

Answer a**Explanation**

The break-even point is found using the formula: $\text{fixed costs} \div (1 - \text{variable costs} \div \text{sales})$.
Entering the corresponding values produces the following result:

Fixed costs: 450,000 yen (labor costs) + 250,000 yen (depreciation costs) = 700,000 yen
Variable costs: 500,000 (materials costs) + 350,000 yen (outsourcing costs) + 350,000 (advertising costs) = 1,200,000 yen
Break-even point: $700,000 \text{ yen} \div (1 - 1,200,000 \text{ yen} \div 4,000,000 \text{ yen}) = 1,000,000 \text{ yen}$

Q18.

Section 1-2 Legal affairs

Answer a**Explanation**

A compliance program concerning personal information protection is a system that manages the systematic implementation of measures related to personal information protection throughout the entire company.

Q19.

Section 3-2 System planning

Answer c**Explanation**

Risk analysis identifies the possible risks of computerization and their causes, and measures the degree of loss and impact that result from occurrence. The risks are prioritized according to predicted probability and the amount of loss, and measures are taken to address them according to priority.

Q20.

Section 3-1 System strategy

Answer b**Explanation**

Rectangular entities represent “employees” and “departments.” Each employee belongs to one (1) department, and each department has one (1) or more employees, so the arrow should point from the department to the employee (“many” side).

Q21.

Section 2-3 Business industry

Answer b**Explanation**

EDI is a mechanism for exchanging electronic data in transactions between companies over communication lines.

Q22.

Section 2-1 Business strategy management

Answer b**Explanation**

A niche strategy concentrates on a specific market (niche market) to secure and maintain profits in, rather than a market with major companies.

Q23.

Section 2-1 Business strategy management

Answer b**Explanation**

Data mining refers to analyzing large stores of data to find rules, causal relationships, and new information hidden inside.

Q24.

Section 3-1 System strategy

Answer C**Explanation**

The order comes from the customer, so the data source is the “customer.” The “order” data comes from the customer and is registered in the “order” file before inventory is allocated for the “registered order.” The “shipping instructions” are sent to the warehouse, so the data recipient is the “warehouse.”

Q25.

Section 2-3 Business industry

Answer b**Explanation**

An ETC system is a system that automates highway toll payments.

Q26.

Section 1-2 Legal affairs

Answer a**Explanation**

In a service contract, the employee performs work under the instruction of the employer, even if working out of the office of the client. This differs from dispatching in terms of who issues the instructions. In dispatching, the dispatched person performs work under the instruction of the client.

Q27.

Section 1-1 Corporate activities

Answer a**Explanation**

A Gantt chart shows the work schedule and results using horizontal bars. By placing hours or days on the horizontal axis and work items on the vertical axis, the order of work, the number of days required etc. can be managed.

Q28.

Section 3-2 System planning

Answer C**Explanation**

The requirements definition defines the requirements of computerization such as the task overview and workflow. It is necessary to study and analyze the requests of the user (system user department) and review whether the system to be developed is feasible in terms of costs and technology.

Q29.

Section 1-2 Legal affairs

Answer C**Explanation**

In “4.2.4 Record Management” of “Quality Management Systems based on JIS Q 9001:2000,” it states that “Records should be prepared and maintained to provide evidence of conformance with requirements and effective operation of the quality management system. They should be easy to read, easy to identify and easy to search...”

Accordingly, it is important to store the records on a server for sharing.

Q30.

Section 3-1 System strategy

Answer a**Explanation**

Outsourcing is an arrangement in which a third party specialist is entrusted either entirely or in part with developing, running, and maintaining an information system. By entrusting the work to a third party with more specialized knowhow, costs involved in developing an information system can be reduced.

Q31.

Section 2-1 Business strategy management

Answer C**Explanation**

The area represented by (C) has a low market share and low market growth rate. In other words, the possibilities for the business are limited so there is no need for investment, and withdrawal should be considered for the future.

Q32.

Section 2-3 Business industry

Answer C**Explanation**

An ERP package is software designed to streamline management operations by managing all of the company’s resources in an integrated manner. When adopting an ERP package, analysis and verification of the company’s business processes are essential.

Q33.

Section 1-1 Corporate activities

Answer b**Explanation**

The flow of a purchase transaction is as follows:

- (1) The person requesting the purchase (who wants to purchase) products or materials prepares a request form and has it approved.
- (2) Once the request form is approved, the person in charge of ordering at the department that will actually be making the purchase gets an estimate and places the order.
- (3) When the order is delivered, the person in charge of receiving inspections inspects it before giving it to the person who requested the purchase.

Therefore, the proper combination is b).

Q34.

Section 1-2 Legal affairs

Answer C**Explanation**

The Unfair Competition Prevention Act prohibits the act of obtaining trade secrets including the knowhow, customer lists, and system designs of a corporation through fraudulent means such as deception and theft. However, it does not prohibit disclosing trade secrets to integrated companies.

- a): Displaying false information is prohibited.
- b): Obtaining another company's trade secrets through fraudulent means is prohibited.
- d): Creating products that consumers may confuse with those of another company.

Q35.

Section 4-2 Software development management techniques

Answer b**Explanation**

A data oriented approach focuses on the structure of data that is handled in business, creating a database and developing a system around it. Even if changes are made to the business process, the structure of the backbone data remains the same, so system changes are easy to implement.

Q36.

Section 6-1 Service management

Answer b**Explanation**

ITIL (Information Technology Infrastructure Library) is a framework that encompasses know-how for the success of a business that employs IT services, and the best methods and practices.

It is organized into a set of seven (7) books. ITIL is a set of comprehensive guidelines for IT services, but rather than introducing it as is, operations should be compared for each enterprise, and only the portions that are applicable should be referred to.

Q37.

Section 4-1 System development technology

Answer b**Explanation**

Systems architecture design involves the design of parts seen from the outside so that the functions meet the requirements of the user (system user department). It includes not only input and output design, but also brainstorming the necessary data, and designing the data structure and code system.

Software architecture design determines how the internal functions required by the system will be implemented, including the physical data structure, method of data processing, and method of checking.

Q38.

Section 6-1 Service management

Answer d**Explanation**

An SLA (Service Level Agreement) is a document that defines the quality and scope of IT services provided to the user. It is a quality assurance agreement concluded between a provider and user of IT services.

This form of contract was originally popularized by telecommunications carriers to guarantee the quality of communications in network services. Standards are set for specifications such as minimum data transfer speeds and maximum downtimes, and rules for penalties and compensation are stipulated for instances when the standards are not met.

Q39.

Section 5-1 Project management

Answer C**Explanation**

After a project is completed, an assessment of the disparities between the plan and the results, the changes and their causes, and the risks and their countermeasures is carried out. Information that will be useful for the next project is then recorded in the project completion report.

Q40.

Section 4-1 System development technology

Answer a**Explanation**

Equivalence partitioning is a method in which input data is divided into valid equivalence and invalid equivalence classes, and values representative of those classes are used as test data.

Q41.

Section 4-2 Software development management techniques

Answer C**Explanation**

A waterfall model is a development technique in which each process from upstream to downstream is carried out without going back. Therefore, it is necessary to assign the appropriate number of personnel to each process.

Q42.

Section 6-2 System audit

Answer d**Explanation**

The characteristic process not found in accounting or operations audits is the exchange of opinions with the department being audited to check whether there are no misinterpretations within the report.

Q43.

Section 6-1 Service management

Answer d**Explanation**

If the problem is with the information system being used, the most important thing is to report on the status, screens, repeatability, and other conditions. Since it is not limited to e-mail, no e-mail address is necessary. It is used with a Web browser, so there is no need to report on the free hard disk space or the installed applications.

Q44.

Section 6-2 System audit

Answer a**Explanation**

The audit step is carried out in two (2) steps: the preliminary audit for ascertaining the system and audited department, and the main audit in which the items established in the individual plans are audited in detail.

Q45.

Section 4-2 Software development management techniques

Answer b**Explanation**

The spiral model is a software development technique in which the system is divided into a number of subsystems, and the cycle from requirements analysis to operation is repeated for each subsystem while working on development.

Q46.

Section 4-1 System development technology

Answer d**Explanation**

Penetration tests are also called intrusion tests. Deliberate attempts are made from the outside to attack or intrude into the system, and check for security holes and errors in the settings.

Q47.

Section 6-1 Service management

Answer C**Explanation**

Facility management is an approach for maintaining and protecting the computers, networks, facilities, and equipment in a company's possession, and keeping them in optimal condition. It was originally intended for managing and operating a company's facilities, but it has expanded to apply to information systems as well.

Q48.

Section 6-1 Service management

Answer b**Explanation**

Service delivery is a guideline for medium- to long-term planning and improvements. It explains the techniques for properly providing IT services, including availability and the effect of investments.

Q49.

Section 4-1 System development technology

Answer b**Explanation**

When conducting system tests on a server installed at headquarters under the internal LAN environment, the only thing that can be accurately verified is the set of tasks processed using the internal LAN. The response time from when the request for processing is sent to the computer, to when the results are received is difficult to verify as the network environment varies depending on the communication lines used to connect headquarters to the other offices.

Q50.

Section 6-2 System audit

Answer a**Explanation**

The definition of IT governance as provided by the Ministry of International Trade and Industry (now the Ministry of Economy, Trade and Industry) is "the organizational capacity of a company to control the formulation and implementation of an IT strategy and guide it in the proper direction to establish a competitive advantage." In other words, it is a decision-making system for properly building and operating a company's information systems.

Q51.

Section 4-1 System development technology

Answer d**Explanation**

If a failure occurs, it is important to investigate the cause, but it is necessary to prepare measures in advance so that the system as a whole and the important services are not interrupted.

Q52.

Section 4-1 System development technology

Answer C**Explanation**

System requirements specification is carried out as part of systems architecture design. The test process corresponding to systems architecture design is the system test (comprehensive test) that checks whether the system as a whole meets the requirements.

Unit tests are carried out for the programming process, joint tests are carried out for software architecture design, and operations tests are carried out for the basic design process.

Q53.

Section 6-2 System audit

Answer d**Explanation**

When conducting a system audit, a preliminary audit is carried out in order to get an overall grasp of the system. The preliminary audit is carried out prior to the main audit, and involves meeting with the manager of the department being audited and reviewing documents.

Q54.

Section 6-2 System audit

Answer C**Explanation**

Policies and procedures for incorporating internal control into business activities are called control activities.

Q55.

Section 4-1 System development technology

Answer b**Explanation**

The function point method is a method of estimating development costs and person-hours by quantifying the number of input/output screens and files used, and the difficulty of the functions to be developed. It is suited for GUI and object-oriented development.

Q56.

Section 5-1 Project management

Answer C**Explanation**

The person-months needed to make the changes can be found by dividing the number of programs to be modified by the volume of work in one (1) person-month.

First, find the number of programs to be modified using the following formula:

$$5,000 \times 20\% = 1,000$$

Next, find the volume of work in one (1) person-month by multiplying the number of programs that can be modified in one (1) day by one (1) programmer by the number of work days in a month:

$$0.2 \times 20 \text{ days} = 4$$

Therefore, the number of necessary person-months is found using the following formula:

$$1,000 \text{ programs} \div 4 = 250 \text{ person-months}$$

Q57.

Section 5-1 Project management

Answer b**Explanation**

When launching a project, the project objectives are first clarified. Afterwards, a schedule is prepared based on the objectives, and whether the work is progressing according to that schedule is managed.

Q58.

Section 5-1 Project management

Answer b**Explanation**

The company is responsible for managing the system development tasks, so it is essential to keep track of the progress and issues that arise. By keeping track of progress on development of the system, problems such as a lack of engineers or skills can be quickly discovered and addressed if progress does not meet expectations.

Q59.

Section 6-2 System audit

Answer a**Explanation**

Control activities are policies and procedures for incorporating internal control into business activities.

When incorporating internal control into business activities, it is necessary to clarify the risk of illegal and fraudulent acts occurring within business processes. It is also important to clarify the authority and responsibilities of the person in charge, ensure division of duties, and establish a system for checking to make sure rules for responding to risks are properly implemented.

Q60.

Section 9-2 Multimedia

Answer C**Explanation**

JPEG is a file format for the compression and storage of static images. It can handle 24-bit full color (16,770,000 colors) data, making it suitable for images with many color variations such as photographs.

Q61.

Section 9-2 Multimedia

Answer a**Explanation**

MP3 (MPEG-1 Audio Layer-3) is a file format for compressing and storing stereo/audio data using the part of MPEG-1 that controls sound. It is widely used to distribute music over the Internet. MPEG is a file format for storing compressed video files that has been standardized by ISO.

b): SDMI is a file format standardized by an organization established to protect digital music copyrights, and is used on mobile music players.

c): ATRAC3 is a file format developed by Sony for compressing and storing audio.

d): MIDI is a file format for storing musical data such as pitch, volume, and tone.

Q62.

Section 8-1 Computer component

Answer a**Explanation**

The external bus clock frequency is the clock frequency of the peripheral circuits, and is different from the CPU clock frequency. A clock frequency is a signal for managing the timing of devices and circuits.

Q63.

Section 8-3 Software

Answer a**Explanation**

Middleware is software that operates between the OS and application software. It bridges the differences between the basic software and hardware, and provides common functions for various fields of use.

Q64.

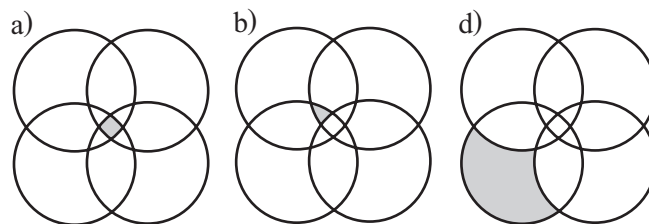
Section 8-4 Hardware

Answer d**Explanation**

It is a question about types of displays. a), b), and d) do not require backlights, but OLED displays are the lowest in power consumption and drive voltage.

Q65.

Section 7-1 Basic theory

Answer c**Explanation**

A Venn diagram cannot fully show four (4) convergences, and only c cannot be represented in this diagram.

Q66.

Section 9-3 Database

Answer d**Explanation**

Roll back is a method of restoring a system when a program is program is abnormally terminated during a transaction. A pre-update journal (pre-update information) is used to restore the system to its state just before the transaction.

Q67.

Section 9-4 Network

Answer d**Explanation**

MIME is a protocol for extending data formats that can be sent and received by e-mail. It enables the attachment of files such as word processing documents, images, and audio files, where before only single-byte character code text formats could be handled.

Q68.

Section 7-2 Algorithms and programming

Answer d**Explanation**

Through repetition, the value of a changes as follows:

1st time: 8
2nd time: 16
3rd time: 32
4th time: 64
5th time: 128

Q69.

Section 8-2 System component

Answer a**Explanation**

Using a browser creates a uniform environment for all clients, so sharing and maintenance work is reduced.

Q70.

Section 7-1 Basic theory

Answer a**Explanation**

VHS video images are analog data, requiring conversion into digital data when saving to DVD. BMP images and MPEG color videos and audio stored on magnetic disks are all digital data, so they can be stored and output as is.

Q71.

Section 8-1 Computer component

Answer d**Explanation**

CPU caches are called primary and secondary caches according to the order in which they are accessed. There is no difference in the speed at which primary and secondary caches are accessed, and both increase the speed at which the CPU and main memory are accessed.

Q72.

Section 8-4 Hardware

Answer b**Explanation**

A general purpose computer is designed for use with office functions and scientific computation. It is used in systems such as train seat reservation systems and online banking systems.

Q73.

Section 8-2 System component

Answer d**Explanation**

A benchmark is a standard or reference. Benchmark tests for computer systems are a means of measuring the execution time of standard programs and comparing/assessing the performance of multiple computers. Program processing time and the volume of processing in a given amount of time are quantified for assessment and comparison with other computers.

Q74.

Section 9-4 Network

Answer a**Explanation**

By placing a limit on the size of each user's mailbox, problems with insufficient capacity can be avoided. At the same time, the total size of the mailboxes can be estimated based on the number of users.

Q75.

Section 7-2 Algorithms and programming

Answer d**Explanation**

XML is a set of rules based on SGML that enables easy-to-use markup language on the Internet. Users can define their own styles and tags to describe the structure and meaning of data.

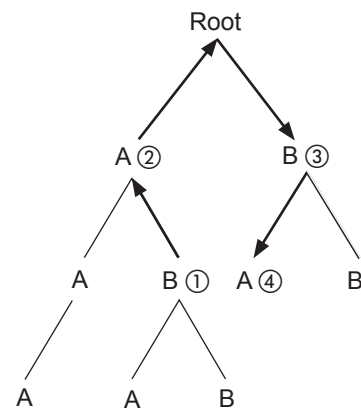
Q76.

Section 8-3 Software

Answer d**Explanation**

The first position (\A\B) is ① in the figure.
Proceeding with these rules results in the following:

- ..go up one level ②
 - ..go up one level (root) with \B,
 - and go down to \B ③
 - ..go down one level ④ with \A
- So the final position is ④.



Q77.

Section 9-5 Security

Answer d**Explanation**

Phishing is the act of fraudulently obtaining personal information from people by sending e-mails impersonating an existing company, organization, or other entity. A specific means used is sending e-mails in the name of an existing company, and directing recipients to a fake website resembling the real one, in order to have them enter their personal information. As a result, recipients who have their personal information stolen may have their personal information leaked, be tricked out of their money, be made to purchase a product, or suffer other damages.

Q78.

Section 8-1 Computer component

Answer a**Explanation**

A common characteristic of both USB and IEEE1394 is that they have a function called “hot plugging,” which allows them to be inserted or removed while the computer or device is still on. In addition, they are both serial interfaces, and can be connected to several devices in the form of a tree through a single interface using a peripheral device called a “hub.”

Q79.

Section 8-3 Software

Answer a**Explanation**

A plug-in is a program that adds functions to application software. It extends the functionality of the application software and can be upgraded or uninstalled separately from the software.

- b): Describes a search site.
- c): Describes programming.
- d): Describes a UPS (Uninterruptible Power Supply).

Q80.

Section 9-4 Network

Answer C**Explanation**

Resources can be shared and data can be exchanged by using a network environment. Data editing can be performed in a standalone environment as well.

Q81.

Section 7-2 Algorithms and programming

Answer a**Explanation**

A Java servlet is a program that is executed on a Web application server in response to a request from a client.

Q82.

Section 9-3 Database

Answer a**Explanation**

A database is a collection of various data (information) organized and stored in a single location according to a certain purpose. Databases are equipped with the function to maintain data consistency so that even if multiple users manipulate the database simultaneously, no discrepancies arise in the data.

Q83.

Section 9-5 Security

Answer C**Explanation**

A digital signature verifies the identity of the sender, and provides a guarantee that the data has not been altered along the way.

Q84.

Section 9-1 Human interface

Answer C**Explanation**

Multiple items can be selected using a checkbox.

- a): A component for having text and numbers entered.
- b): A menu that displays items in a list in an up-to-down direction when selected.
- d): A component which allows only a single item to be selected from a list of several.

Q85.

Section 8-2 System component

Answer a**Explanation**

A cluster system is a configuration in which multiple computers (including servers) are linked together in a network, and operated as if they were one system. In a cluster system, services can be provided without interruption even in the event of a failure.

- b): Describes a thin client.
- c): Describes a duplex system.
- d): Describes a firewall.

Q86.

Section 9-1 Human interface

Answer C**Explanation**

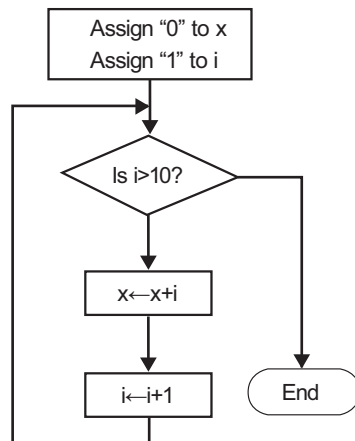
Universal design is the design of products, services, and environments that can be used by as many people as possible without applying special designs or modifications. It is based on the idea that it is important to make things convenient for all users.

Q87.

Section 7-2 Algorithms and programming

Answer d**Explanation**

A repetition structure like that shown in the figure.

**Q88.**

Section 9-5 Security

Answer d**Explanation**

An information security policy clarifies the basic security policy within the organization, including not only technical measures, but also rules to observe and approaches to decision-making, in order to implement uniform information security measures throughout the entire organization.

Q89.

Section 9-5 Security

Answer C**Explanation**

Rule (1) under “Rules for Initial Settings of New PCs” states that the user must “install the specified antivirus software,” so using a trial version contrasts with the rules.

Q90.

Section 9-5 Security

Answer C**Explanation**

By restricting software that can be run on a Web browser, the possibility of malicious scripts being installed or unauthorized programs being installed can be lowered.

Q91.

Section 9-5 Security

Answer d**Explanation**

Leaks of personal or confidential information harm the competitiveness of the company, and ultimately put its continued existence at risk. Therefore, the most important reason is d).

Q92.

Section 9-5 Security

Answer d**Explanation**

Incidents of leaks of personal and confidential information due to virus infections from installing software unrelated to work activities have been reported. The fundamental solution to the problem is not to install software such as Winny and Share.

Q93.

Section 9-3 Database

Answer d**Explanation**

A lock prevents other users from using data that a user is updating or referencing. The types of locks are as follows:

- Exclusive lock: Prevents updates and references
- Shared lock: Prevents updates

Q94.

Section 2-3 Business industry

Answer a**Explanation**

An IC tag is an IC chip that can be scanned using a wireless system. The chips are extremely small, so it is easy to put them in key holders, wristbands, and other compact items.

Q95.

Section 9-3 Database

Answer C**Explanation**

A reorganization process is a process in which database fragmentation, which results from repeated addition and deletion of data, is eliminated. Reorganizing the database improves the speed of data manipulation.

Q96.

Section 9-3 Database

Answer d**Explanation**

- a): Start and finish times should not be included in member information.
- b): Start and finish times should not be included in facility information.
- c): There are not enough items linking reservation information with member information.

Q97.

Section 9-4 Network

Answer b**Explanation**

There is already an 8-port hub available, so purchasing an additional 8-port hub will allow all devices to be connected.

Q98.

Section 9-4 Network

Answer C**Explanation**

Ten (10) cables are required: seven (7) for office administration computers + one (1) for the file server + one (1) for the printer + one (1) for the hub cascade.

Q99.

Section 9-4 Network

Answer C**Explanation**

Normally, software comes with a license for use on only one computer, but if additional licenses are purchased, the software can be used on that number of computers. It costs less to purchase additional licenses than it does to purchase software packages for all of the computers, and it also eliminates unnecessary packaging and manuals.

- a): Purchasing only one copy and installing it on several computers is prohibited.
- b): It costs more than purchasing licenses.
- d): Applying security measures to only the server is not sufficient. The software needs to be installed on all computers.

Q100.

Section 9-4 Network

Answer a**Explanation**

PBX (Private Branch eXchange) refers to a private branch exchange for internal numbers. By connecting a PBX to the phone line, an extension telephone network can be established within a limited scope such as a company.

Practice exam 3 answers

Q1.

Section 1-1 Corporate activities

Answer a

Explanation

A divisional system organization is an organization that is divided up according to the product, or region, or market being dealt with, and it has a partial or complete staff department (indirect department) for each division.

Q2.

Section 1-2 Legal affairs

Answer b

Explanation

Making a false statement about a product's place of origin infringes on fair competition between companies and violates the Unfair Competition Prevention Act.

Q3.

Section 3-2 System planning

Answer b

Explanation

A computerization plan is a plan for developing an information system that will improve the efficiency of tasks based on the business and enterprise strategies. A computerization plan is formulated at the final stage of substantiating the system.

Q4.

Section 1-2 Legal affairs

Answer d

Explanation

A copyright originates when a work is created, and the term of protection is 50 years after the death of the copyright holder (in the case of cinematographic works, 70 years after the release of the film). a) and c) are statements concerning industrial property rights.

Q5.

Section 2-2 Technological strategy management

Answer b

Explanation

A cell production system is a production system used in the manufacturing industry in which one or several workers take charge of an entire process, from installation of components to assembly, processing, and inspection. It is a production system that was advocated against a background of diversifying consumer needs and mass production bases.

Q6.

Section 2-1 Business strategy management

Answer a

Explanation

CRM is a management technique for strengthening not only sales activities, but also the relationship with the customer. By focusing on improving customer satisfaction, it aims to build a relationship of trust with the customer, obtain customer loyalty (the customer has trust in the corporation), and maximize the customer's lifetime value (the customer continues to deal with the corporation for many years).

Q7.

Section 1-2 Legal affairs

Answer b**Explanation**

Lease is the term used when an employee, while still belonging to (employed by) a certain corporation, works for another corporation (such as a group company or affiliated corporation). During a lease of an employee, work is performed under the direction and supervision of the corporation to which the employee is leased.

In a service contract, no relationship is formed between Corporation *B* and Worker *C*. In a temporary worker dispatch contract, there is no employment relationship between Corporation *B* and Worker *C*.

Q8.

Section 3-2 System planning

Answer d**Explanation**

When considering a development framework, not only the system development department, but also the business operations department that will actually use the system should be included. By having both departments involved in computerization, it is possible to develop a system that incorporates the original demands in accordance with the business strategy.

Q9.

Section 2-3 Business industry

Answer d**Explanation**

A debit card is a card issued by the cardholder's financial institution that can be used to purchase products. When making a purchase, the card is presented and the cardholder's personal identification number is entered into the terminal. The charge is withdrawn from the cardholder's account in real time, so there is no need to withdraw cash from the account to make the payment.

- a): Describes an ETC card.
- b): Describes a prepaid card.
- c): Describes a point card.

Q10.

Section 2-3 Business industry

Answer C**Explanation**

An embedded system is a system that is embedded into an industrial device or home appliance in order to achieve a specific function. It is integrated in the form of semiconductor ROM.

Q11.

Section 3-1 System strategy

Answer C**Explanation**

The sales calculation is based on the order information, which gives the quantities of the products ordered. The "unit price" information required in the sales calculation, "Sales = Unit price × Quantity", is in the unit price file. In general, unit price is not recorded in the sales file, order file, or payment file.

Q12.

Section 1-1 Corporate activities

Answer b**Explanation**

ROE (Return On Equity) indicates the ratio of net profit for the current period (return) to owned capital for the number of shares issued (equity). In other words, it is an index that measures a corporation's business efficiency in terms of how much profit can be generated using the money (capital) received from shareholders.

Q13.

Section 3-2 System planning

Answer b**Explanation**

When defining operational requirements, a meeting is held with the user (system user department), and functions required for task execution, requirements for improving the workflow, and requirements regarding design of human interfaces are investigated. This content is analyzed and the requirements are analyzed/examined to determine whether they are technically feasible.

Q14.

Section 2-3 Business industry

Answer C**Explanation**

Electronic money makes it possible to pay for products by using a card or a mobile phone that has been charged with a sum of money, rather than using cash.

Q15.

Section 1-1 Corporate activities

Answer a**Explanation**

An ABC analysis is an analysis technique used in areas such as sales management and inventory control to clarify the importance and priority of products. It is used to manage the sales situation of products by arranging them in descending order of amount of sales.

Q16.

Section 2-3 Business industry

Answer a**Explanation**

The participating store hands the product to the user, and the user actually pays the money to the credit card company. Therefore, (A) is the participating store, (B) is the user, and (C) is the credit card company.

Q17.

Section 1-2 Legal affairs

Answer d**Explanation**

The Copyright Act stipulates that software can be modified without the permission of the copyright holder if the modification is necessary and unavoidable.

Q18.

Section 2-1 Business strategy management

Answer C**Explanation**

CTI is an application technology that links telephones and fax machines to computers. It can automatically answer a telephone call, and transfer it to the appropriate receiver according to the content of the caller's inquiry.

Q19.

Section 2-3 Business industry

Answer C**Explanation**

A reverse auction is a type of auction in which buyers show the amount of money that they wish to pay, and sellers then indicate the amount of money that their company can offer. The buyer ultimately enters into a transaction with the cheapest company.

Reverse auctions are often used in bidding for public works and services.

Q20.

Section 2-1 Business strategy management

Answer C**Explanation**

M&A is an abbreviation for mergers and acquisitions of corporations. The purposes of M&A include entry into new businesses or markets, business tie-up, corporate reorganization, and management bailout.

a): Describes OEM.

b): Describes capital participation.

d): Describes outsourcing.

Q21.

Section 1-1 Corporate activities

Answer C**Explanation**

Three (3) units of Part *B* and four (4) units of Part *C* are required in order to make one (1) unit of Product *A*. Therefore, in order to make 30 units of Product *A*, 90 units of Part *B* ($3 \text{ units} \times 30$) and 120 units of Part *C* ($4 \text{ units} \times 30$) are required. There are 10 units of Part *B* in the inventory, so the net requirement is $90 \text{ units} - 10 \text{ units} = 80 \text{ units}$.

Q22.

Section 1-2 Legal affairs

Answer C**Explanation**

The use of platform-dependent characters such as Roman numerals and numbers enclosed in circles is discouraged in e-mails as they may not display correctly on the receiver's side.

Q23.

Section 3-1 System strategy

Answer C**Explanation**

SOA is an approach that combines software functions and components to build a system. SOA makes it possible to build a system in a flexible way by using services that are called upon according to standardized procedures, either individually or in combination.

Q24.

Section 3-1 System strategy

Answer d**Explanation**

Data flow in a DFD is represented by a straight line ending in an arrowhead with a written description of the information flowing there.

Sometimes multiple data flows come from one process, and others times go into one process. Also, processes exist between files, and are connected by data flows.

Q25.

Section 1-2 Legal affairs

Answer a**Explanation**

Modification of software is prohibited under the right of avoidance of modification in the Copyright Act. However, modifications can be made if they are unavoidable in the range of use. a) does not fall under violation of copyright since the changes are necessary due to the replacement of the computers.

Q26.

Section 2-1 Business strategy management

Answer d**Explanation**

A core competence in business terminology refers to “capability (competence) in areas such as technology or capital that comprise a company’s core, which no other company can imitate.” Therefore, it is a strength to the corporation, and a management resource for differentiating the corporation from others by creating projects and products that cannot be imitated. It also provides a competitive edge over rival corporations in terms of business strategy, and plays a key role in influencing and leading partners when collaborating with other companies.

Q27.

Section 1-1 Corporate activities

Answer b**Explanation**

The break-even point is found by “Fixed cost ÷ (1 – Variable cost ÷ Revenues)”. Therefore, by substituting numerical values, the break-even point can be found using the following formulae:

Fixed cost: 100 million yen (fixed subcontracting cost) + 50 million yen (fixed sales cost)
= 150 million yen

Variable cost: 250 million yen (materials cost (variable cost)) + 250 million yen (subcontracting cost (variable cost)) = 500 million yen

Break-even point: 150 million yen ÷ (1 – 500 million yen ÷ 1,000 million yen) = 300 million yen

Q28.

Section 3-1 System strategy

Answer b**Explanation**

An ASP is a service that delivers software using the Internet. Using an ASP has advantages in terms of cost and management/operation as it makes it unnecessary to perform software installation work or version control in-house. It is characterized by the single-tenant system, which provides a server for each user.

Q29.

Section 1-1 Corporate activities

Answer b**Explanation**

A balance sheet displays the financial situation of a corporation at a certain point in time. In a balance sheet, everything including goods is converted into an amount of money, and entered as a transaction.

Q30.

Section 1-1 Corporate activities

Answer C**Explanation**

The total number of months of use of the lease will be the original total lease fee subtracted from the total lease fee of 12 million yen, divided by the monthly lease fee of the renewed lease, plus 4 years (48 months).

First, to find the difference between the 12 million yen total lease fee (including the renewed lease fee) and the original total lease fee,

$$12 \text{ million yen} - 11.52 \text{ million yen} = 0.48 \text{ million yen}$$

Then, finding the monthly lease fee from the original total lease fee of 11.52 million yen,

$$11.52 \text{ million yen} \div 48 \text{ months} = 0.24 \text{ million yen}$$

The monthly fee for the renewed lease is 1/12 of the original monthly lease fee, so

$$0.24 \text{ million yen} \div 12 = 0.02 \text{ million yen}$$

The difference in money between the period of the renewed lease and the period of the original lease is 0.48 million yen, so the period of the renewed lease is

$$0.48 \text{ million yen} \div 0.02 \text{ million yen} = 24 \text{ months}$$

Therefore, the total number of months of use of the lease,

$$48 \text{ months} + 24 \text{ months} = 72 \text{ months}$$

Q31.

Section 1-1 Corporate activities

Answer C**Explanation**

The required sales amount can be found by “(Fixed cost + Target profit) ÷ (1 – Variable cost ratio).”

$$\text{Target profit: } 2 \text{ million yen (profit)} \times 2 = 4 \text{ million yen}$$

$$\text{Variable cost ratio: } 6 \text{ million yen (variable cost)} \div 10 \text{ million yen (sales amount)} = 0.6$$

$$\begin{aligned} \text{Required sales amount: } & (2 \text{ million yen} + 4 \text{ million yen}) \div (1 - 0.6) \\ & = 6 \text{ million yen} \div 0.4 = 15 \text{ million yen} \end{aligned}$$

The unit selling price of the product is 5,000 yen, so the number of units estimated to be sold can be found using the following formula:

$$15 \text{ million yen} \div 5,000 \text{ yen} = 3,000 \text{ units}$$

Q32.

Section 6-1 Service management

Answer b**Explanation**

IT service management is a management method for stable and efficient operation of information systems by regarding it as provision of IT services. By managing IT services with the objective of operating them efficiently and maintaining/improving service quality, IT service management plays an important role in supporting corporate management and society as a whole.

Q33.

Section 5-1 Project management

Answer a**Explanation**

At the planning stage, elements required to execute the project are clarified, such as the project implementation budget, implementation process, and problem areas. The project launch, kick-off meeting, and selection of project managers are carried out before making the plan.

Q34.

Section 4-1 System development technology

Answer b**Explanation**

The role of external design (systems architecture design) is to fulfill the requirements of the user (system user department), and it involves designing the parts of the system that are visible from the outside. Other than input and output design, external design also includes identifying the necessary data items to design data structures and coding schemes.

Q35.

Section 4-1 System development technology

Answer d**Explanation**

A review confirms whether there are any bugs (errors) in a design or system. The purpose of a review is to improve quality by discovering and fixing any potential bugs.

Q36.

Section 6-2 System audit

Answer d**Explanation**

Follow-up refers to activities carried out after a system audit report is made, such as confirming whether the recommended improvements have been implemented, and supporting the improvement efforts. Audits are carried out periodically to check the implementation status of reform, and perform follow-up audits if necessary.

Q37.

Section 6-1 Service management

Answer c**Explanation**

Service delivery refers to guidelines on medium- to long-term planning and improvement. It explains methods for providing appropriate IT services including investment effects and availability of IT services.

Q38.

Section 6-1 Service management

Answer a**Explanation**

There are five (5) processes in service support. By implementing these processes, IT services can be managed in an integrated way.

Service support processes are arranged in the following order: Incident management → Problem management → Configuration management → Change management → Release management.

Q39.

Section 5-1 Project management

Answer d**Explanation**

A project completion report is created after system acceptance. It details the execution cost and progress, work record, list of deliverables, evaluation, etc. and records information that could be useful in the next project.

Q40.

Section 4-2 Software development management techniques

Answer a**Explanation**

A characteristic of the prototyping model is that prototypes are created at an early stage in system development, and development progresses as the prototypes are checked by the user.

Q41.

Section 4-1 System development technology

Answer C**Explanation**

If the system user department has developed the system, it will carry out systems architecture design such as identifying the necessary functions by considering how to transpose tasks, and designing input/output screens, forms, and other human interfaces. It will also check the system from an operational perspective after installation. However, the system development department will be responsible for detailed program design.

Q42.

Section 5-1 Project management

Answer C**Explanation**

In unit testing of 100 programs, the following tasks are carried out: Design of test data → Preparation of test data → Implementation of test → Verification of test results. The progress rate for each task is derived from the person-hour ratio for the task and the number of programs for which the task is complete.

$$20 \text{ (person-hour ratio)} \times (100 \text{ [no. of programs for which task is complete]} / 100 \text{ [total no. of programs]}) = 20$$
$$20 \text{ (person-hour ratio)} \times (100 \text{ [no. of programs for which task is complete]} / 100 \text{ [total no. of programs]}) = 20$$
$$20 \text{ (person-hour ratio)} \times (70 \text{ [no. of programs for which task is complete]} / 100 \text{ [total no. of programs]}) = 14$$
$$40 \text{ (person-hour ratio)} \times (50 \text{ [no. of programs for which task is complete]} / 100 \text{ [total no. of programs]}) = 20$$

Furthermore, the overall rate of progress can be found by adding these together.

$$20 + 20 + 14 + 20 = 74$$
Q43.

Section 6-1 Service management

Answer a**Explanation**

Since it is a helpdesk for in-house information systems, it does not need to address problems concerning unrelated devices brought in from outside the company.

Q44.

Section 6-1 Service management

Answer a**Explanation**

Service support consists of processes for supporting operation of services, and it is part of the ITIL framework.

The service support processes are incident management, problem management, configuration management, change management, release management, and help desk.

Q45.

Section 6-2 System audit

Answer d**Explanation**

The purpose of a system audit is to examine the information system from a broad perspective, and determine whether it serves the business policy and strategy of the corporation efficiently. In general, audit items for consideration include whether reliability with regard to faults is ensured, whether security with regard to disasters or unauthorized access is ensured, and whether the system contributes to management.

Q46.

Section 6-2 System audit

Answer C**Explanation**

In system audit planning, documented audit plans are created which include a “documented medium- and long-term plan” covering several years, a “documented basic plan” covering the fiscal year, and “individual documented plans” covering audit items.

Q47.

Section 6-2 System audit

Answer a**Explanation**

Control activities are the basic elements necessary for implementing internal control, as well as the mechanism for mitigating the effect of small errors on corporate activities as a whole.

Q48.

Section 4-1 System development technology

Answer b**Explanation**

Boundary value analysis is a method that uses values at equivalence class boundaries as test data. Caution must be exercised if the boundary conditions are complicated, as it is easy for test data to be omitted.

Q49.

Section 6-2 System audit

Answer C**Explanation**

In internal control, reliability of financial reporting is important for ascertaining the financial condition of a corporation.

Q50.

Section 4-1 System development technology

Answer d**Explanation**

It is clear that there are many defects and testing is not progressing since not only is the total number of defects actually more isolated than predicted, but the actual number of incomplete test items is also higher than predicted. A large number of defects indicates that quality is poor, so either the programmer has insufficient technical ability, or the unit testing was not conducted properly. Therefore, it is appropriate to conclude that the cause lies in the previous process.

Q51.

Section 6-2 System audit

Answer d**Explanation**

IT governance is a mechanism aimed at strengthening competitive power by making use of information systems to implement business strategies.

Q52.

Section 5-1 Project management

Answer C**Explanation**

The critical path (longest path) when ten (10) days is required for Task *D* is as follows:

$$A(5) + C(5) + D(10) + E(5) + \text{Dummy task}(0) + H(6) = 31 \text{ days}$$

If the number of days required for Task *D* on the critical path is reduced to 6 days,

$$A(5) + C(5) + D(6) + E(5) + \text{Dummy task}(0) + H(6) = 27 \text{ days}$$

If the number of days required for Task *D* is six (6) days, the critical path is as follows:

$$A(5) + C(5) + F(12) + H(6) = 28 \text{ days}$$

Therefore, the number of days by which the work as a whole can be reduced is as follows:

$$31 \text{ days} - 28 \text{ days} = 3 \text{ days}$$

Q53.

Section 4-1 System development technology

Answer a**Explanation**

The created program must operate normally regardless of the kind of data that is inputted. Therefore, data with a variety of values is prepared and testing is performed.

- b): If the programmer prepares the test environment, it is more difficult for unexpected errors to occur, so a programmer should not prepare the test environment.
- c): Program quality improvements should be carried out at the design stage, so repeating tests with the aim of improving quality should be avoided.
- d): It is better to add test data that can confirm whether the modified program works correctly to the test data used up until the modification, and perform retesting.

Q54.

Section 4-2 Software development management techniques

Answer d**Explanation**

When a program that has gone live is modified directly, it cannot be restored if bugs occur as a result of the modifications. Therefore, modification work should be carried out on a copy of the program for test use.

Q55.

Section 5-1 Project management

Answer a**Explanation**

The estimate targeted a productivity of 100% using 150 person-months in development, but the reality is 30% productivity using 60 person-months. If development work continues at this productivity level, the number of person-months until work is completed will be $60 \text{ person-months} \div 30\% = 200 \text{ person-months}$. Therefore, the estimate will be exceeded by $200 - 150 = 50 \text{ person-months}$.

Q56.

Section 6-1 Service management

Answer b**Explanation**

Security wires are wires that are installed in order to fasten portable notebook computers and other small devices in place. They can be used to prevent theft by attaching them to a stationary object such as a desk or rack.

Q57.

Section 9-5 Security

Answer d**Explanation**

A macro virus is a virus that infects a computer when a file created using word processing or spreadsheet software is opened.

- a): A virus that infects the location where the programs that are executed on system startup are stored.
- b): A virus that infects other programs when the infected program is executed.
- c): A virus that makes the infection difficult to detect by hiding itself.

Q58.

Section 9-3 Database

Answer b**Explanation**

An online transaction processing system is a system in which a server carries out processing based on a request from a client connected to the network, and returns the processing results to the client. If processing such as a database update, addition, or deletion is interrupted, the data will be inconsistent. Therefore, reliability is required.

Q59.

Section 7-1 Basic theory

Answer C**Explanation**

The number of combinations for choosing four (4) numbers from 1 to 20 is,

$$\begin{aligned} {}_{20}C_4 &= (20 \times 19 \times 18 \times 17) \div (4 \times 3 \times 2 \times 1) \\ &= 4845 \end{aligned}$$

Q60.

Section 8-2 System component

Answer C**Explanation**

A three-tier client/server system is a system which is distributed across the three (3) tiers of client, application server, and database server. The client possesses user interfaces, and the database server possesses data processing functions. The application server is placed between them to receive requests from the client, and execute business logic that returns results. Therefore, even if the data processing logic is changed, there is little impact on the client.

Q61.

Section 8-3 Software

Answer d**Explanation**

In order to prevent files from disappearing, two (2) copies are usually created as backup files, and should be stored in separate locations.

- a): A backup medium with sufficient space to store all of the backup data is chosen.
- b): Backing up is scheduled so that it does not interfere with day-to-day operations such as after business processing is complete.
- c): Backing up is performed periodically, every day, every week, or every month.

Q62.

Section 9-4 Network

Answer b**Explanation**

A bridge is a device that connects multiple LANs that use the same data link control protocol (OSI second layer). Bridges possess filtering functions that determine whether a frame (units of data transfer) flows to a neighboring LAN depending on the MAC address.

Q63.

Section 9-1 Human interface

Answer d**Explanation**

Screen input may become troublesome if there are many complicated explanations on the screen or if the user is skilled. As a countermeasure, the screen should be kept simple, and input items requiring an explanation should be explained in the help function.

Q64.

Section 9-3 Database

Answer b**Explanation**

In the “asset” table, the building number and room number refer to the “room” table, and the building number refers to the “building” table. Also, the building number in the “room table” refers to the “building” table. When new data is entered, data must be prepared starting with the tables that will be referred to. Therefore, it must be entered in the order of “building” table, “room” table, and “asset” table.

Q65.

Section 8-3 Software

Answer b**Explanation**

A virtual storage system increases the apparent capacity of the main memory by temporarily saving part of the main memory’s data in auxiliary memory (hard disk, etc.) when a program that exceeds the capacity of the main memory is executed.

- a): Data is saved from the main memory to auxiliary memory and returned from the auxiliary memory to the main memory, so the effective access speed is reduced.
- c): Power consumption is not affected.
- d): Even if a virtual storage system is used, as long as the main memory is RAM (volatile memory), the information in the main memory will disappear when the power is turned off.

Q66.

Section 8-4 Hardware

Answer d**Explanation**

A tablet is a device that inputs locations on a plane surface via a coordinate indicator. It is suitable for inputting design drawings and other illustrations.

Q67.

Section 9-4 Network

Answer d**Explanation**

S/MIME is a protocol that adds security functions (encryption functions) to MIME. It can prevent interception, spoofing, and falsification of e-mails.

- a): When attaching binary data such as images to e-mails, it is a method of converting the content into text format. BASE64 conforms to MIME standards.
- b): It is a file compression format.
- c): It is a format that compresses and saves static images.

Q68.

Section 8-1 Computer component

Answer a**Explanation**

Clock frequency represents the number of signals generated by the CPU in one (1) second. The higher the clock frequency, the faster the computer executes instructions. The role of the CPU is to perform arithmetic processing of data by executing instructions.

Q69.

Section 7-1 Basic theory

Answer a**Explanation**

The mean can be found by "Total of scores ÷ No. of people." The median is the value at the center position when the data is arranged in ascending or descending order, so it is 60. The mode is the value that appears most often in the data, so it is 60.

Q70.

Section 9-4 Network

Answer a**Explanation**

FTP is a service for transferring files, and is used to download and upload files.

Q71.

Section 8-4 Hardware

Answer d**Explanation**

A issues a print request after 10 seconds, and the printing is completed 30 seconds after that. In other words, it takes a total of 40 seconds. Likewise, *B* is completed after 70 seconds + 30 seconds = 100 seconds. *C* issues a print request after 80 seconds, but the printing starts after 100 seconds when printing for *B* is complete. Therefore, the length of time from when *A* starts printing until all printing is complete is 130 seconds.

Q72.

Section 7-2 Algorithms and programming

Answer a**Explanation**

A java servlet is a program developed using Java that runs on the Web application server in response to browser requests.

Q73.

Section 7-2 Algorithms and programming

Answer d**Explanation**

The general term for languages that describe the structure of documents using tags is markup language or tagged language. Typical examples include HTML, XML, and SGML.

- a): A language that defines the structure of documents created using markup languages such as XML and SGML.
- b): A language that describes procedures in applications, and is simpler than a programming language.
- c): A language that specifies the visual quality of documents created using markup languages such as HTML, XML, and SGML.

Q74.

Section 8-1 Computer component

Answer a**Explanation**

Memory that retains its contents when the power is turned off is appropriate as semiconductor memory in digital cameras. Flash memory is a type of EEPROM, capable of retaining its stored contents when the power is turned off.

Q75.

Section 8-3 Software

Answer d**Explanation**

Linux was released as an open source OS, allowing anyone to freely modify and redistribute it as long as certain rules are followed.

Q76.

Section 9-2 Multimedia

Answer b**Explanation**

The compression technology used in HDTV, digital broadcasting, and DVD-digital is MPEG-2, and data transfer rates range from several Mbps to tens of Mbps.

Q77.

Section 9-2 Multimedia

Answer a**Explanation**

A multimedia authoring tool is software for combining material such as images, sound, and text to create multimedia content.

Answer b**Explanation**

This calculation separates the quotients and remainders of the divisions.

If the 8-digit date data is divided by 10000, the month and day can be extracted from the remainder.

$$20071021 \div 10000 = 2007 \cdots \text{Remainder } 1021$$

Therefore, $(D \% 10000)$ is the formula for extracting the month and day.

If this remainder is divided by 100, the month can be extracted as the quotient and the day can be extracted as the remainder.

$$1021 \div 100 = 10 \cdots \text{Remainder } 21$$

Therefore, these are represented in the following formula:

$$(D \% 10000) / 100$$

Answer a**Explanation**

Social engineering is the act of fraudulently obtaining passwords and other confidential information from individuals within an organization without using networks or other electronic means, by pretending that there is an emergency situation or some other form of deception.

Answer b**Explanation**

The following setting method can be read from the trial results:

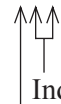
① $(0)_8 = (000)_2$: No type of access was allowed.

② $(3)_8 = (011)_2$: Read and update access was allowed, but create access was not allowed.

③ $(7)_8 = (111)_2$: All types of access were allowed.

From this, the setting of access rights is as follows:

$(111)_2$



Indicates read or update access rights.

Indicates create access rights.

From the above results, if the octal numbers in the answers are written as binary numbers,

a) : $(2)_8 = (010)_2$ Read or update access rights only.

b) : $(4)_8 = (100)_2$ Create access rights only

c) : $(5)_8 = (101)_2$ } “Create and update” or “create and read” access rights.

d) : $(6)_8 = (110)_2$ }

Therefore, the correct answer is b).

Answer d**Explanation**

A characteristic of USB is that up to 127 peripheral devices can be connected in a tree shape using a USB hub.

Q82.

Section 8-2 System component

Answer C**Explanation**

Initial costs are costs that occur when an information system is installed. Operator costs, equipment maintenance costs, and equipment leasing costs are costs that occur after the information system is installed.

Q83.

Section 7-2 Algorithms and programming

Answer d**Explanation**

JavaBeans is a Java class developed in Java. It is a technical specification for creating Java programs that are partitioned into components (beans).

Advantages of JavaBeans include development of new programs and increased development efficiency through reuse and combination of programs partitioned into components.

Q84.

Section 9-4 Network

Answer b**Explanation**

The length of time the line is used to transmit the daily report data is 50 minutes 30 seconds, and this is rounded up to 51 minutes for the calculation. The connection fee (monthly) for transmitting the daily report data is,

Basic fee 2,600 yen/month + (40 yen/minute × 51 minutes/day × 20 days) = 43,400 yen/month

If the data is compressed, the length of time the line is used is,

50 minutes 30 seconds × 0.6 = 30 minutes 18 seconds *Rounded up to 31 minutes

If the data is compressed, the connection fee (monthly) is,

Basic fee 2,600 yen/month + (40 yen/minute × 31 minutes/day × 20 days) = 27,400 yen/month

The difference between the connection fees (monthly) before and after data compression is,

43,400 yen/month – 27,400 yen/month = 16,000 yen/month

The number of months required to recover the cost of purchasing the software (112,000 yen) is,

112,000 yen ÷ 16,000 yen/month = 7 months

Q85.

Section 9-1 Human interface

Answer C**Explanation**

Pull-down and pop-up menus display options in list format, enabling an option to be selected and inputted. Therefore, when newly registering product data, by using a pull-down or pop-up menu for the “product category” that is selected from among five (5) categories determined beforehand, the product category can be inputted efficiently and input errors can be avoided.

“Product number”, “product name”, and “price”, are items that are suited to direct input from the keyboard.

Q86.

Section 9-5 Security

Answer b**Explanation**

Leaks of confidential data can be detected by keeping records of access (access logs) and checking them regularly.

- a), c) : Measures for preventing leaks before they occur.
d) : A measure for when data has been corrupted.

Q87.

Section 7-1 Basic theory

Answer b**Explanation**

The shaded areas are where A and D , and C and D respectively overlap, with the exception of B . Therefore, the search condition is the logical product of A and D , and C and D , excluding B .

Q88.

Section 9-5 Security

Answer a**Explanation**

It is important for the computer installation location to be equipped with disaster prevention functions that protect against earthquakes and fires, as well as full safety and security features.

- b): For security, doorways should be kept to a minimum.
c): Damage to piping can result in leakage, so it should not pass above the ceiling.
d): To minimize temperature fluctuations, a location that receives as little direct sunlight as possible is preferable.

Q89.

Section 9-5 Security

Answer C**Explanation**

Installation of anti-virus software is fundamental, but for new viruses, automatic updates should be enabled to keep the pattern files up-to-date.

- a): Even if antivirus software is installed, there is the risk of security holes that may be attacked unless the OS is updated.
b): Opening file attachments in e-mails from an unfamiliar sender can lead to a virus infection, so they should never be opened.
d): Files brought in from outside and e-mail attachments should be checked for viruses and then saved.

Q90.

Section 9-5 Security

Answer C**Explanation**

In the event of a computer virus infection, appropriate instructions can be given and damage can be prevented from spreading by disconnecting the network cable and contacting the person in charge of the information systems department by telephone.

Q91.

Section 9-5 Security

Answer a**Explanation**

Packet filtering is a function that checks the IP address or TCP port number/UDP port number of a packet, and only allows it to pass if the IP address or TCP port number/UDP port number has been registered and approved beforehand. This makes it possible to prevent entry of packets that have not been approved from the Internet.

Q92.

Section 9-5 Security

Answer b**Explanation**

A “physical measure” refers to managing people, equipment, buildings, rooms, and other things that physically exist. It oversees who and when someone has entered or left a building or room containing equipment that records personal information, whether the room with the equipment is locked, and whether the equipment is fastened in place by chains or other means to prevent it from being moved outside.

Q93.

Section 9-3 Database

Answer a**Explanation**

From conditions (2) and (3), it is evident that the products and raw materials are each used multiple times, so the relationship is many-to-many and both product ID and ingredient ID are necessary as primary keys.

Q94.

Section 9-3 Database

Answer d**Explanation**

In order to restrict access, it is necessary to lock the database. In the case of shared locks, data cannot be updated but it can be referenced. An exclusive lock is applied in order to restrict both updating and referencing of data.

Q95.

Section 9-3 Database

Answer b**Explanation**

The amount of raw materials used per product can be calculated by grouping the raw materials by product ID, and adding the amounts of raw materials used.

Q96.

Section 1-1 Corporate activities

Answer a**Explanation**

A bar graph is the most suitable method for comparing amounts.

b): A pie chart is suitable when representing percentages of data.

c): A radar chart is suitable when comparing the characteristics of a number of elements.

d): A line graph is suitable when representing transitions in data.

Q97.

Section 1-1 Corporate activities

Answer b**Explanation**

From the performances shown for each sales office, it is evident that the Yokohama office had the highest sales. Also, the Hamamatsu office had the highest estimate comparison and the sales closest to its estimate.

- a): The sales office with the highest growth in sales compared to the previous year is the Hamamatsu office, with a year-to-year comparison of 107%.
- c): Sales have grown compared to the previous year at the Kawasaki branch and the Hamamatsu office, where the year-to-year comparisons exceed 100%.
- d): The Shizuoka branch reported sales closest to the previous year's sales.

Q98.

Section 1-1 Corporate activities

Answer b**Explanation**

In the list of sales performance by division, the sales offices where both the estimate and the year-to-year comparison do not reach 100% are the Yokohama office and the Mishima office. Also, the only place where the estimate comparison is below 80% is the Yokohama office. Therefore, B is the Yokohama office.

Q99.

Section 8-3 Software

Answer d**Explanation**

The composition ratio of sales performance by sales office can be found by dividing the performance of each sales office by the total performance.

In order to copy the formula entered in Cell D3 to Cells D4 to D7, it is necessary to fix Row 7 of Column D in which the total performance is entered. Therefore, the correct answer is d), =C3/C\$7.

Q100.

Section 1-1 Corporate activities

Answer C**Explanation**

A pie chart is the most suitable type of graph for displaying the composition ratios.