Association of Accounting Technicians of Sri Lanka

Level II Examination - January 2024

Suggested Answers

Association of Accounting Technicians of Sri Lanka
No.540,Ven. Muruththettuve Ananda Nahimi Mawatha,
Narahenpita, Colombo 05.
Tel : 011-2-559 669

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THE ASSOCIATION OF ACCOUNTING TECHNICIANS OF SRI LANKA
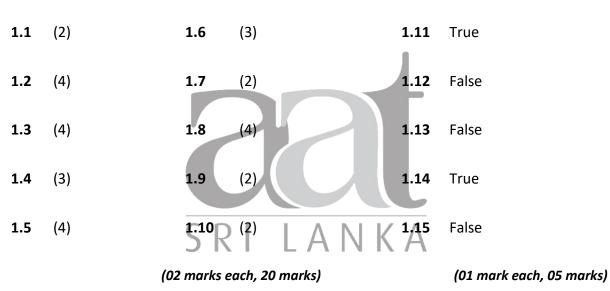
Level II Examination - January 2024

(202) INFORMATION SYSTEMS IN DIGITAL

ENVIRONMENT

Fifteen (15) Compulsory Questions.
(Total 25 Marks)

SECTION - A

Suggested Answers to Question One:

1.1	(2)	**1.6**	(3)	**1.11**	True
1.2	(4)	**1.7**	(2)	**1.12**	False
1.3	(4)	**1.8**	(4)	**1.13**	False
1.4	(3)	**1.9**	(2)	**1.14**	True
1.5	(4)	**1.10**	(2)	**1.15**	False

(02 marks each, 20 marks)   *(01 mark each, 05 marks)*

(Total 25 marks)

End of Section A

Suggested Answer for Question Two:

Chapter 01 - Concepts of Information Systems and Impact of Information Systems

(a)

1. Software

2. Hardware

3. Procedures

4. People

5. Data

6. Communication

(03 marks)

(b)

1. **Improved Efficiency** – Information Systems (IS) and Information Technology (IT) play a crucial role in enhancing the efficiency of business operations. Automation of routine tasks, streamlined communication and the use of advanced software and hardware contribute to increased productivity. For example, Enterprise Resource Planning (ERP) systems integrate various business processes, allowing real-time information sharing between different departments. This integration reduces manual data entry, minimizes errors, and enables a more efficient use of resources. Efficient business processes can result in cost savings, faster decision-making, and improved overall performance.

2. **Enhanced Communication** – Information Technology and Information systems enhance communication between employees, suppliers, and customers by facilitating efficient exchange of information, enabling seamless collaboration, and providing various communication channels such as email, VoIP, and smartphones. For many companies, email is the principal means of communication between employees, suppliers and customers. Voice over internet Protocol (VoIP) telephones and smartphones offer even more high-tech ways for employees to communicate.

3. **Effective Inventory Management** – Effective inventory management involves balancing stock levels to meet demand while minimizing excess investment. Inventory management systems monitor item quantities, automatically initiating orders when levels drop below set thresholds. This ensures organizations maintain optimal stock levels, avoiding both shortages and excessive inventory holding costs.

4. **Strategic Decision-Making** – Information Systems provide valuable data and analytics tools that enable organizations to make more informed and strategic decisions. Business Intelligence (BI) systems analyze large datasets to extract meaningful insights, helping executives and managers understand market trends, customer behavior, and internal performance metrics. Timely access to accurate information allows for proactive decision-making, identifying opportunities and addressing challenges before they escalate. This strategic use of information contributes to the overall performance and competitiveness of the business in the marketplace.

5. **Better Customer Relationship Management (CRM)** – Companies are using IT to improve the way they design and manage customer relationships. Customer Relationship Management (CRM) systems capture every interaction a company has with a customer, so that, a more enriching experience is possible. If a customer calls a call center with an issue, the customer support representative will be able to see what the customer has purchased, view shipping information, call up the training manual for that item and effectively respond to the issue.

6. **Data Management system** – The days of large files rooms, rows of filing cabinets and the mailing of documents is fading fast. Today, most companies store digital versions of documents on servers and storage devices. These documents become instantly available to everyone in the company, regardless of their geographical location. Companies are able to store and maintain a tremendous amount of historical data economically, and employees benefits from immediate access to the documents they need.

7. **Competitive Advantage** - Competitive advantage is achieved through Information Systems and Technology by leveraging data-driven insights for strategic decision-making, enhancing customer experiences through personalized services and efficient operations, enabling innovation and agility, and fostering collaboration within the organization. This leads to differentiation, increased market share, and sustainable growth in the dynamic business landscape.

8. **Cost reduction and resource optimization** – Information Systems and Technology drive cost reduction and resource optimization by automating processes, streamlining operations, and enhancing efficiency. Through data analytics, companies identify areas for improvement, minimize waste, and allocate resources more effectively. This leads to improved productivity, lower operational expenses, and better utilization of organizational resources.

(04 marks)
(05

(c)

Information Technology (IT) and Information Systems (IS) are closely related concepts that are integral to the modern business environment. IT refers to the hardware, software, networks, and other technological tools and resources used to store, process, transmit, and retrieve information within an organization. It encompasses the entire spectrum of computing technology, including computers, servers, databases, networks, and software applications. IT is essentially the infrastructure and tools that enable the effective management and processing of information.

On the other hand, Information Systems (IS) represent the broader, organizational-level application of IT. IS involves the integration of IT components to support business processes, decision-making, and overall organizational functions. Information Systems include not only the technical components but also the people, processes, and data that work together to achieve business objectives. In essence, IT is a subset of IS, with IT focusing on the technology itself, and IS encompassing a more comprehensive view of how technology is utilized strategically within an organization to facilitate information management and decision-making processes. The relationship between IT and IS is interdependent, as effective information systems rely on well-implemented and managed information technology.

(03 marks)
(Total 10 marks)

Suggested Answer for Question Three:

Chapter 02 - Information Technology Infrastructure

(a)

1. Smartphone

2. Tablet

3. Laptop/ Notebooks

4. Ultra-mobile PCs

5. PCs

6. PDAs

7. Netbook

(02 marks)

(b)

Device	Network Connectivity Options	Operating Systems
Laptop/Notebook	LAN, Wi-Fi, Bluetooth, Ethernet, Cellular (in some cases)	Windows, Mac OS X, Linux
Smartphones	Mobile Data, 3G, 4G, 5G, Wi-Fi, Bluetooth	Android, iOS, Windows Mobile
Tablets	Wi-Fi, 3G, 4G, 5G, Mobile Data, Bluetooth	Android, iOS, Windows Mobile, Chrome OS
Netbook	Wi-Fi, Bluetooth	Windows, Linux
Ultra mobile PC	Wi-Fi, Cellular (3G, 4G, 5G), Mobile Data, Bluetooth	Android, iOS, Windows Mobile, Chrome OS
PDAs	Wi-Fi, Cellular (3G, 4G, 5G), Mobile Data, Bluetooth	Android, iOS, Windows Mobile, Chrome OS, Other OSs

(04 marks)

(c)

i. Word Processing Software

   Software Package: Microsoft Word, Google Docs, Open Office Writer

ii. Desktop Publishing Software

   Software Package: Adobe InDesign, Microsoft Publisher, QuarkXPress, Serif-Page Plus, Scribus

(04 marks)
(Total 10 marks)

Suggested Answer for Question Four:

Chapter 03 - Information Systems in Organizations

(a)

1. **Usability/User-Friendliness** – Consider how user friendly the system will be for all those members of staff required to use it. In some organizations those may include Marketing professional, the IT department, database developers and others. Look at the suitability from everyone's perspective and consider whether company can set different levels of access permission for different users.

2. **Compatibility** – Ensure that the chosen IT system aligns with existing infrastructure and technologies to promote seamless integration. Compatibility issues can lead to operational disruptions and increased costs.

3. **Visualization and reporting –** Visualization and reporting are crucial considerations when selecting and implementing IT systems. Potential systems should offer user-friendly interfaces for data visualization, enabling intuitive interpretation of information. Additionally, robust reporting capabilities ensure stakeholders have access to relevant insights for informed decision-making, facilitating effective utilization of the IT system's capabilities.

4. **Security** – Securing organizational data is vital in any information system implementation. It involves safeguarding business-sensitive and personal information from loss, theft, or corruption due to human error. Implementing encryption, access controls, and regular security audits ensures compliance with regulations and protects against cyber threats, prioritizing data integrity and confidentiality.

5. **Scalability** - Scalability is a key factor taken into account during the selection and implementation of IT systems. It involves assessing the system's ability to grow and adapt to changing needs over time. The chosen system should be flexible enough to accommodate increasing demands and expansions without compromising performance or functionality.

6. **Functionality –** When selecting and implementing an IT system, functionality is evaluated by ensuring that the available modules and components align with the core business requirements. This involves confirming that the system's features and capabilities meet the specific needs of the organization, enabling efficient operations and supporting key business processes effectively.

7. **Support and Development** – Support and development are integral considerations when selecting and implementing an IT system. It's crucial to evaluate the support services provided by the software company, ensuring prompt assistance and resolution of issues. Additionally, having a clear development plan assures clients that the software will evolve with emerging technologies, ensuring ongoing support and enhancement throughout its lifespan.

8. **Integration** – This involves assessing whether the new system can seamlessly integrate with current databases, platforms, and hardware. Additionally, identifying any necessary interface components ensures smooth merging of systems, minimizing disruptions and maximizing efficiency.

9. **Cost and Suitability**- When selecting and implementing an IT system, cost and suitability are evaluated to ensure optimal decision-making. While cost is important, prioritizing suitability ensures the chosen software meets business needs effectively. It's crucial to avoid costly mistakes by selecting a product that fits the purpose, rather than solely focusing on price. Similarly, expensive software isn't necessary if its functionalities aren't heavily utilized.

10. **Hosting** – When selecting and implementing an IT system, hosting is a critical consideration. This involves deciding whether the system will be hosted in-house or by a third-party company. Factors like support, cost (including additional hardware requirements), security, and speed are influenced by this decision, impacting the overall effectiveness and efficiency of the IT solution.

11. **Requirements for Updates** – When selecting and implementing an IT system, the approach to updates is crucial. The frequency and automation of updates are key considerations. Assess whether real-time connectivity with other systems is necessary or if daily or weekly updates suffice. Additionally, automating the update process requires a consistent data source, impacting system reliability and efficiency.

(04 marks)

(b)

- It provides 24x7 supports. Customers can enquire about a product or service and place orders anytime, anywhere from any location.
- E-commerce application provides users with more options and quicker delivery of products.
- E-commerce application provides users with more options to compare and select the cheaper and better options.
- A customer can put review comments about a product and can see what others are buying, or see the review comments of other customers before making a final purchase.
- E-commerce provides options of virtual auctions.
- It provides readily available information. A customer can see the relevant detailed information within seconds, rather than waiting for days or weeks.
- E-Commerce increases the competition among organizations and as a result, organizations provide substantial discounts to customers.

(03 marks)

(c)

Enterprise Resource Planning Systems (ERP) and Functional Information Systems (FIS) serve distinct roles based on their scope and purpose within information systems. **ERP systems** are overarching, encompassing diverse business functions like finance, HR, and supply chain management to enhance organizational efficiency and decision-making through integrated data sharing.

In contrast, **FIS** are tailored to specific departments or functions such as HRIS, AIS, and MIS, offering specialized solutions to meet unique operational needs within individual areas. While ERP systems aim for comprehensive organization-wide integration, FIS focus on targeted support for specific business functions, aligning with their distinct scope and purpose within the information systems landscape.

(03 marks)
(Total 10 marks)

Suggested Answer for Question Five:

Chapter 04 - Ethical, Social and Legal Environment for Information Systems

(a)
(i). Product Promotion
- Blog Posts
- Videos
- Podcasts
- Comments
- Share
- tagging

(ii) After Sales Services
- Customer Support Channels (Communities, Chatbots)
- Private Messaging
- Community Building/ Groups
- Feedback and Reviews

(02 marks)

(b)
- **Power Management:** Implement strategies to power down CPUs and peripherals during periods of inactivity to reduce energy consumption.
- **Task Scheduling:** Schedule computer-related tasks during specific blocks of time to optimize energy usage and minimize idle hardware.
- **Peripheral Management:** Power up and power down energy-intensive peripherals like laser printers to conserve energy.
- **Power Management Features:** Utilize power management features available in devices to save electricity and promote energy efficiency.
- **Paper Reduction:** Minimize paper usage by opting for digital documents and soft copies whenever possible to reduce environmental impact.
- **E-Waste Disposal:** Dispose of electronic waste in accordance with federal, state, and local regulations to ensure responsible recycling and minimize environmental harm.
- **Alternative Energy:** Explore the use of alternative energy sources such as solar or wind power for computing workstations, services, networks, and data centers to reduce reliance on fossil fuels.
- **Energy Efficiency and Resource Conservation:** Prioritize the use of energy-efficient hardware and equipment to reduce energy consumption and conserve resources.
- **Lifecycle Management:** Implement responsible lifecycle management practices for hardware and equipment, including proper disposal methods, to minimize environmental impact throughout the product lifecycle.

(04 marks)

(c)

- **Upgrade to Supported Software Versions**: Transition to newer, officially maintained software versions to ensure continuous security updates and support, mitigating risks associated with outdated software vulnerabilities.

- **Maintain Software and App Updates:** Regularly download and install the latest software and application updates to optimize security, performance, and access to new features.

- **Deploy Updated Anti-Virus Solutions:** Utilize up-to-date anti-virus software with the latest virus definitions and security patches to defend against evolving threats effectively.

- **Strengthen Password Practices:** Enhance security by creating strong, complex passwords with combinations of letters, numbers, and symbols to mitigate unauthorized access risks.

- **Exercise Caution with Emails:** Educate employees to identify and delete suspicious emails promptly, avoiding clicking on unknown attachments or links that may contain malicious content or phishing attempts.

- **Implement Data Backup Protocols:** Establish procedures to regularly back up important files and information to mitigate data loss risks, ensuring the ability to restore data in case of unexpected incidents or system failures.

- **Provide Cybersecurity Training:** Train staff to recognize and respond to cybersecurity threats effectively, integrating cybersecurity awareness into annual training plans to adapt to evolving digital risks.

- **Manage Security Partnerships:** Maintain secure relationships with suppliers and partners, adhering to best practices and compliance standards to minimize vulnerabilities and safeguard the broader supply chain.

- **Adopt Strong Authentication Methods:** Enhance authentication security by implementing multi-factor authentication (MFA) mechanisms, requiring users to provide multiple forms of identification for access, reducing the risk of unauthorized entry.

- **Regularly Update and Patch Systems:** Implement systematic procedures to regularly update and patch software, operating systems, and applications across all systems and infrastructure components. Automated patch management tools streamline the process, ensuring timely application of security patches and compliance with industry regulations.

- Move away from using unsupported software.

(04 marks)
(Total 10 marks)

Suggested Answer for Question Six:

Chapter 05 – Technology Trends Impacting on Information Systems

(a)
1. On app payment by integrating Digital Wallet Technology
2. QR Code Payment
3. Advance payment
4. Automatic deductions from the bank
5. Automated Invoicing
6. Loyalty and rewards cards
7. Contactless card payments by integrating NFC (Near Field Communication) Technology

(03 marks)

(b)
1. Flexibility and Convenience
2. Cost-Effectiveness
3. Enhanced Learning Experience with Multimedia Content
4. Trackable progress and performance metrics
5. Taking feedback (make business decision)
6. Real time demand prediction
7. Automated dispatch
8. Personalized user experience
9. Updated content

(03 marks)

(c)
Artificial Intelligence (AI) integration within TechRide's taxi system can revolutionize its operations and enhance customer experiences through various innovative applications.

- **Route Optimization and Navigation:** Implement AI-driven route optimization to improve navigation efficiency for drivers. Machine learning algorithms analyze real-time traffic data and historical patterns to recommend the most efficient routes, reducing travel times and operational costs while improving passenger satisfaction.

- **Personalized Customer Experience:** AI can tailor customer experiences by analyzing user data and preferences. Recommendation systems in the TechRide app can suggest preferred pickup locations, frequent destinations, or personalized promotions based on individual behavior. Natural Language Processing (NLP) enhances customer support interfaces for effective query handling.

- **Automated Fare Estimation and Dynamic Pricing**: AI algorithms calculate real-time fare estimates considering factors like distance, traffic, and demand. Dynamic pricing adjusts fares dynamically to optimize earnings during peak demand, ensuring fairness and transparency for both drivers and passengers.

- **Safety and Risk Management:** AI-driven computer vision systems monitor safety in real-time, detecting hazards and unusual behaviors to ensure passenger and driver safety. Fraud detection algorithms identify and prevent suspicious activities related to payments or bookings.

- **Automated Maintenance Scheduling**: AI predicts maintenance needs by analyzing vehicle sensor data and historical records, enabling proactive maintenance scheduling. This approach prevents breakdowns, reduces downtime, and extends vehicle lifespan, contributing to cost savings and reliability.

By leveraging AI technologies across these areas, TechRide can optimize resource allocation, improve operational efficiency, and deliver superior customer service, positioning itself as a leader in the taxi service industry.

(04 marks)
(Total 10 marks)

Suggested Answer for Question Seven:

(a)

> **Chapter 02 – Information Technology Infrastructure**

1. Initial cost and monthly subscription
2. Speed (upload and download speed) and Bandwidth
3. Availability and coverage
4. Data Caps
5. Terms of the contract
6. Equipment and installation cost
7. Redundancy options
8. Connection type (ADSL, Fiber, HSDA, LTE, Satellite)
9. Customer Support and reputation
10. Additional services and bundles
11. Whether ISP offer integrated voice and data service
12. Reliability and Uptime
13. Bandwidth and Speed Options
14. Security Measures
15. Scalability
16. Flexibility

(04 marks)

(b)

> **Chapter 03 – Information Systems in Organizations**

Super Drug Mart Ltd. can implement the following information systems to address the needs of each management level:

- **Operational Level Information System: Inventory Management System**
  - o An Inventory Management System within the ERP can track stock levels, manage orders, and monitor pharmaceutical movement across branches.
  - o Barcode scanning and real-time updates enable accurate tracking of drug quantities, expirations, and reorder points, reducing stockouts and overstocking.
  - o This system facilitates efficient stock management, procurement processes, and ensures smoother operations at the pharmacy level.

- **Managerial / Tactical Level Information System: Business Intelligence (BI) System**
  - o A Business Intelligence Dashboard within the ERP consolidates data from various sources, including sales, inventory, and customer interactions.

- Managers can analyze key performance indicators, sales trends, and inventory turnover rates to make informed decisions.
- Customizable reports and visualizations help optimize inventory levels, assess promotional activities, and improve operational efficiency across branches.

- **Executive / Strategic Level Information System: Executive Information System (EIS)**
  - An Executive Information System (EIS) provides top-level decision-makers with real-time summaries and analytics focusing on strategic information.
  - It includes financial metrics, market trends, and competitive analysis to support strategic decision-making.
  - The EIS enables executives to assess the success of online pharmaceutical retailing and track the effectiveness of social media promotions to enhance the company's competitive position.

Alternative Answer:

1. Operational Level

- OAS – A computer- based information management solution that integrates and automates routine office tasks and processes.
- TPS – A computerized system that facilitates and manages the routine and repetitive handling of business transactions.

2. Tactical Level

- MIS – A computerized framework that facilities the gathering, processing, storing and dissemination of information to support managerial decision-making within an organization.

3. Strategic Level

- DSS – A computerized information system that utilizes data analysis, modeling and interactive tools to assist individuals and organizations in making informed decisions by providing relevant and timely information.
- ESS – A computer-based application that utilization knowledge and problem-solving rules derived from human experts to assist users in making decisions or solving complex problems.

(05 marks)

(c)

Chapter 03 - Information Systems in Organizations

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1. Customer Segmentation
2. Targeted Marketing
3. Inventory Management
4. Fraud Detection and Security
5. Optimizing Online Retailing
6. Social Media Engagement

7. Product Recommendation

8. Demand Forecasting

9. Competitor Analysis

10. Trend Analysis

11. Geographic Analysis

12. Customer Retention Analysis

13. Predictive Analytics for drug supply

14. Marketing Campaign effectiveness

15. Analyze customer behavior

16. Identify the products based on brand wise

17. Analyze the brand of products with the speed of demand

(04 marks)

(d)

> ### Chapter 03 - Information Systems in Organizations

- **Global Audience:** A website allows the pharmacy network to reach a diverse and widespread audience from various geographical locations around the world, expanding its market reach beyond physical locations.

- **24/7 Availability:** The website operates 24 hours a day, seven days a week, providing customers with constant access to products, services, and information, enhancing convenience and accessibility.

- **Convenience for Customers:** Offering a seamless and user-friendly online platform enables customers to easily access products, services, and information anytime and anywhere, enhancing their overall experience.

- **Personalized Services:** By analyzing customer preferences, behaviors, and historical interactions, the website can tailor product recommendations and experiences to individual needs, improving customer satisfaction and loyalty.

- **Information Sharing:** The website facilitates seamless sharing of information across organizational units and stakeholders, promoting collaboration and enhancing communication through email, VoIP, chat, and other channels.

- **Expanded Market Reach and Customer Accessibility:** Through the website, Super Drug Mart can broaden its market reach and cater to customers beyond physical branch locations. This expanded reach allows the pharmacy to tap into a larger customer base, including those in remote areas or who prefer online shopping.

- **Enhanced Customer Engagement and Information Sharing:** The website serves as a platform for customer engagement and information sharing. It can host valuable content such as drug information, health tips, promotions, and updates, fostering direct communication with customers. Interactive features like blogs, newsletters, and live chat support further enhance customer engagement and satisfaction, strengthening brand loyalty and relationships. Additionally, functionalities like online prescription refills and appointment scheduling improve customer convenience and satisfaction.

(04 marks)

(e)

> *Chapter 02 – Information Technology Infrastructure*

- **Accessibility:** Cloud computing enables access to applications and data from any location worldwide and from any device with an internet connection. This accessibility ensures that employees at different branches can easily collaborate and access necessary information in real-time, leading to smoother coordination of inventory levels, prescription processing, and customer interactions.

- **Cost Savings:** Cloud computing offers computing resources on a pay-as-you-go model, saving Super Drug Mart on the cost of acquiring and maintaining onsite infrastructure. Businesses pay only for the resources they use, eliminating the need for upfront investments in hardware and reducing operational expenses associated with maintaining physical infrastructure.

- **Security:** Cloud providers maintain robust security measures and standards to protect client data stored in the cloud. By leveraging a cloud-based solution, Super Drug Mart can benefit from enhanced security features, including data encryption, regular security updates, and advanced threat detection mechanisms, ensuring the confidentiality and integrity of sensitive information.

- **Scalability and Resource Optimization:** Cloud-based solutions offer scalability, allowing Super Drug Mart to dynamically adjust computing resources based on demand. This flexibility enables the pharmacy network to efficiently scale up or down based on business needs, ensuring optimal resource utilization and preventing over-provisioning, thereby reducing operational costs.

- **Collaboration and Remote Accessibility:** Cloud-based solutions facilitate collaboration and remote accessibility, enhancing the efficiency of business operations. Employees across different branches or locations can seamlessly collaborate in real-time using cloud-based collaboration tools and storage solutions. Additionally, cloud-based solutions enable remote access to critical business applications and data, empowering

employees to work from different branches or remotely, leading to improved collaboration, streamlined workflows, and overall operational efficiency for Super Drug Mart.

(04 marks)

(f)

Chapter 04 - Ethical, Social and Legal Environment for Information Systems

- User comments and reviews
- Direct Messaging
- Patient Confidentiality
- Prescription Information
- Pharmacy records on social media
- Pharmacist-patient communication
- Third-party Apps and Plugins
- Analytics and tracking
- Targeted Advertising
- Data retention and deletion
- Consent for user-generated content
- Customer Privacy and Data Security
- Employee Privacy
- Third-Party Vendor Risks

(03 marks)
(Total 25 marks)

End of Section C