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SRI LANKA

Association of Accounting Technicians of Sri Lanka

Level II Examination - July 2022

Suggested Answers

(202) INFORMATION SYSTEMS IN DIGITAL ENVIRONMENT (ISD)

A publication of the Education and Training Division

THE ASSOCIATION OF ACCOUNTING TECHNICIANS OF SRI LANKA

Level II Examination - July 2022

(202) INFORMATION SYSTEMS IN DIGITAL ENVIRONMENT

SUGGESTED ANSWERS

Fifteen (15) Compulsory Questions (Total 25 Marks)	**SECTION - A**

Suggested Answers to Question One:

1.1	(1)	**1.6**	(1)	**1.11**	True.
1.2	(3)	**1.7**	(1)	**1.12**	False.
1.3	(3)	**1.8**	(4)	**1.13**	True.
1.4	(4)	**1.9**	(3)	**1.14**	True.
1.5	(4)	**1.10**	(3)	**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)

(i) Input data

Exam marks

Index Number

Subjects applied by students

Absent/present data of students

Payment details

Name of the student

Residential address of the student

Identification number (Eg: NIC Number, Passport Number)

E-mail address

Contact details

Examination Level

(ii) Output Information

Exam results grade

Student payment status report

Student absence reports

Reports on student performance

Pass/fail status report of students

Examination results

(04 marks)

(b)

1. Communication between employees, suppliers and customers

Adoption of Information systems facilitates effective ways of communication for an organization with its internal and external stakeholders. For many organizations, email is the principal means of communication between employees, suppliers and customers. Email was one of the early drivers of the Internet, providing a simple and inexpensive means to communicate. Over the years, a number of other communications tools have also evolved, allowing staff to communicate using live chat systems, online meeting tools and video-conferencing systems. Voice over internet protocol (VoIP) telephones and smart-phones offer even more high-tech ways for employees to communicate.

2. New Product Development

A very critical stage in new product development is product concept testing. Since there are a greater number of different product concepts to test, obviously there is a need for a reliable, valid and efficient method, which can benefit from the scalability and interactivity of the new concept. Internet-based information/systems are a new method to support new product development. Particularly In today's technology-fueled business environment, Adoption of Information systems is regarded as one of the most critical factors in new product development

3. Inventory Management Systems

When it comes to managing inventory, organizations need to maintain enough stock to meet demand without investing in more than they require. Inventory management systems track the quantity of each item a company maintains, triggering an order of additional stock when the quantities fall below a pre-determined amount. These systems are best used when the inventory management system is connected to the point-of-sale (POS) system. The POS system ensures that each time an item is sold, one of that item is removed from the inventory count, creating a closed information loop between all departments.

4. Data Management Systems

Adoption of Information System makes it simpler to store operational data, revision histories, communication records and documents. The storing of data manually involves a lot of time and money. A sophisticated Information system stores the information in the database which simplifies the process of finding the data easily.

5. Management Information Systems (MIS)

Management Information Systems (MIS) enable companies to track sales data, expenses and productivity levels. The information can be used to track, sales data, expenses profitability over time, maximize Return on Investment (ROI) and identify areas of improvement.

Managers can track sales on a daily basis, allowing them to immediately react to lower-than expected numbers by boosting employee productivity or reducing the cost of an item.

6. Effective Decision making process

Adoption of Information System eases the process of decision making and simplifies the process of delivering the required information and hence assists in taking better decisions instantly.

7. Customer Relationship Management

Adoption of Information systems enables organizations to improve the way they manage customer relationships. Here, 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.

8. **Facilitate behavioral change within the organization**

Information systems can be effectively implemented to help communication better between the employers and the employees. Information Systems work better as it stores documents and files in folders that can be accessed and shared by the employees. This ensures to oversee the flow of information between the management and the lower-level employees smoothly.

(04 marks)

(c)

Information System is a large umbrella referring to systems designed to create, store, manipulate, or disseminate information. It concern with the quality of the Information.

Information Technology deals with Information processing, storage, and transmission. IT, in particular, is computer technology. It concern with the technological infrastructure. Further Information Technology consists of sub disciplines namely Computing Technology, Communication technology and Information Management Technology.

(02 marks)
(Total 10 marks)

Suggested Answer for Question Three:

Chapter 02 - Information Technology Infrastructure

(a)

(i) Open Office

(ii) SAP - Oracle, Cloud ERP, Odoo, NetSuite, SAP Business One, Microsoft Dynamics 365, Sage 300

(iii) Microsoft Teams, Zoom, Whereby, Google Meet

(iv) Mozilla Firefox, Apple Safari, Search encrypt, one search, Brave browser

(01 mark each, 04 marks)

(b)
1. Minimizes Data Redundancy
2. Improved Data Sharing
3. Improved Data Integrity
4. Better Security
5. Improved Data Consistency
6. Efficient Data Access
7. Data Independence
8. Reduced Application Development and Maintenance Time

(03 marks)

(c)

A **Data center** is a facility composed of networked computers, storage systems and computing infrastructure that organizations use to assemble, process, store and disseminate large amounts of data. Data centers are an important part of cloud computing because they provide the storage and processing power that is necessary for businesses to run their applications. A data center can be used to support public, private, or hybrid clouds. Any service provided on the cloud relies on data centers for their delivery.

(03 marks)

(Total 10 marks)

Suggested Answer for Question Four:

Chapter 03 - Information Systems in Organizations

(a)

Business analytics is a type of predictive analytics. It identifies trends and patterns in the business analytics data that suggest why things are happening and whether similar results will occur in the future. The end goal is to predict what will happen based on what's already occurred and make decisions accordingly. Business analytics is focused on what's most likely to happen in the future. Importance and benefits of Business analytics for XYZ Ltd can be listed down as follows;

- **Customer Demand Analytics**
  Business Analytics can be used to predict demand of the hardware items. Further the relationship between price and demand for each and every hardware item can be analyzed using Business Analytics.

- **Customer Segmentation**
  Business Analytics can be used to identify groups (clusters) of customers who behave in similar ways, for example their brand preferences, price sensitivity, response to promotions etc. using transactional basket-level data.

- **Category Development**
  Determining growth and decline of product categories, using internal trading data and external market data, including identifying new product niches (Eg-Paint brushes, within the established Paints category) or entirely new categories (Eg- Paint Spay Machines)

- **Supply Chain Optimization**
  Planning and managing the flow of goods from suppliers, through depot networks, into stores and onto shelves - using long-term sales data and short-term stock to derive sales and order forecasts.

- **Promotional Analytics**

Exploring Customer (segment) response to promotions, enabling optimization for profit, market share. Using daily (or hourly) store sales.

- **Waste Reduction**

Analyzing rate of sale by store in each district, supply of items can be regulated, which helps to minimize unnecessary waste.

- **Stock Optimization**

How long does a product stay on the shelf? What volumes that the business expect to sell in the coming period? Knowing this allows business to prepare in advance, but also buy only what is needed helps to reduce wasted stock.

- **Basket Analysis**

Which products are generally bought together (go together in the basket)? This is useful to know in order to plan promotions (which items will work well together to convince customers, e.g. buy a Pipe-glue and Pipe-sockets) as well as product placements (if two products that are likely to be bought-together placed-together on shelves).

- **Recommendations**

Suggest new products to customers based on the buying patterns of other customers.

- **Price Optimization**

Calculate price sensitivity, decide whether the business needs a volume or value (i.e. higher-price and less-customers, or lower-price and more-customers) and determine the optimal pricing for products.

- **Customer Loyalty**

To identify how loyal the customers to business and how long they retain and attached to the business.

(04 marks)

(b)

Business intelligence is the practice of using data to find valuable insights and information on consumers that can be used to make informed business decisions. Achieving business intelligence requires a technology-driven process to collect, store, and manage data so it is accessible and ready to be analyzed. Business Intelligence can be used to derive the following benefits;

- **Track customer spending patterns and behaviors**

Customer loyalty programs can be regarded as a way to track customer spending patterns and behaviors. Also this is a very effective way for retailers to track spending patterns and behavior in order to retain the existing customers and stimulate their future purchases.

- **Deliver personalized shopping experiences**

  Business Intelligence enables organizations to provide personalized experience for their customers. This would increase customer loyalty and would thereby result in repeat purchases leading to increased revenue.

- **Conduct effective marketing campaigns**

  Retailers can use Business Intelligence to evaluate the effectiveness of the Marketing Campaigns.

- **Understand the needs, wants, and desires of customers**

  Businesses can develop relationships with their customers and better understand the connected customer. Such customer interactions and personalized engagement are important for customer retention and growth.

  (04 marks)

(c)
1. Enterprise Resource Planning (ERP)
2. Office Automation System (OAS)
3. Transaction Processing System (TPS)
4. Management Information System (MIS)
5. Decision Support System (DSS)
6. Executive Information Systems (EIS)
7. Business Expert System (BES)
8. Financial Information System (FIS).
9. Human Resources Information System (HRIS).

(02 marks)
(Total 10 marks)

Suggested Answer for Question Five:

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

(a)

Advantages of social media

1.The ability to uncover industry trends in real-time.

2. More comprehensive competitive analysis.

3. Provide better customer service and customer satisfaction.

4. Curate customer content and stories in a snap.

5. Customer photos and success stories go hand in hand with higher engagement and conversion rates. And there's no better place to gather both than social media.

6. Positioning power over competitors.

7. Appeal to younger, social-savvy customers.

8. Recruitment.

Disadvantages of social media

1. Cyber bullying
2. Hacking
3. Addiction
4. Loss of reputation
5. Time wasting
6. Hinders physical interactions among people and would result in poor face-to-face communication skills.

(04 marks)

(b)

Social Media restrictions can be bypassed by using a Virtual Private Network (VPN) on websites made locally, as one can access them using a foreign identity.

    I   User should find a good Virtual Private Network (VPN).

    II   An account needs to be created by downloading the VPN software onto the local device.

    III   It is required to log in to the account created in the VPN software.

    IV   Select a VPN server in a foreign country where social networking / media websites are not blocked/ restricted.

    V   Browse and login to personal social networking / media website using the VPN Server after following the above mentioned process.

(02 marks)

(c)

- Reporting the Content Host (Eg: Facebook) and requesting to remove the photograph. Generally the Content host is supposed to remove the photograph if the photograph is uploaded without the permission of the original author. Also, the Content host can be convinced to suspend the suspicious fake account.

- Complaining to the responsible authority (Eg: Cybercrime division of Police) and obtaining their service to take legal action.

(04 marks)
(Total 10 marks)

Suggested Answer for Question Six:

Chapter 05 – Technology trends Impacting on Information Systems
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(a)

A blockchain is a distributed ledger technology that forms a "chain of blocks". Block includes information and data that are bundled together and verified. Blocks are then validated and stung onto the chain of transactions and information previous blocks. These blocks of transactions are permanently recorded in distributed ledger that is the blockchain.

Bitcoin is one of the most popular crypto currencies currently in use. It is currency formed on the basis of cryptography. Bitcoin can be considered as example implementation of blockchain technology.

(04 marks)

(b)

Micropayment is a very small sum of money, usually performed online, for small items or services like freelance performances, tips, pay-per-click advertising and other physical or digital goods on m-Commerce. Micropayments could be used to pay for individual online articles on publications. The huge popularity of mobile services created an opportunity to provide financial services over its wireless network. Micropayments can be used to monthly subscription to certain features, at a cost which is affordable to the consumer. Most of these micro payment systems are embedded and enable on mobile apps for ease of use for the users as a digital wallet.

(03 marks)

(c)

A Donation-based crowd funding platform/site can be used to raise funds from individuals to support personal or social causes or to assist charity projects with no financial returns for the contributors. For instance, crowd funding sites such as Kickstarter, GoFundMe, Indiegogo, Patreon can be used to initiate this crowd funding campaign and invite donors to contribute to this fund which can be used to purchase medical equipments.

(03 marks)

(Total 10 marks)
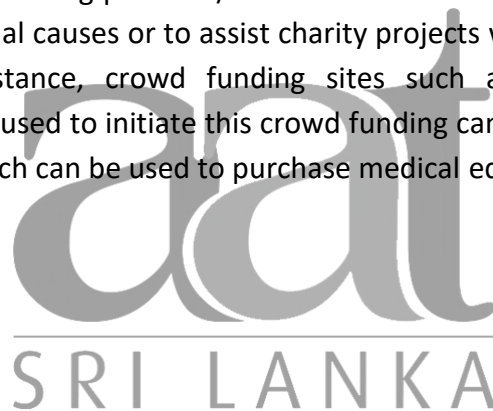
End of Section B

Suggested Answer for Question Seven:

(a)

Chapter 03 - Information Systems in Organizations

Ceylon Spice can use an intelligent warehouse - RFID (Radio Frequency Identification) based tracking for warehouse items. Also it can use robotic collection devices to track the movement of items. Further adoption of a sophisticated tailored Enterprise Resource Planning Software (ERP) could also help Ceylon Spice to track the traceability of raw materials, management and optimization of inventory and efficient management of warehouse space.

(03 marks)

(b)

Chapter 03 - Information Systems in Organizations

1. Customer Insights

Analytical tools allow the company to identify who are the typical customers, how they found the company, what they like and adopt the business through website.

2. Advertising

Tools like Google Ads or advertising on Facebook give the company the power to reach customers with much more accuracy and reliability than with traditional offline advertising methods. By looking at these ads customers would follow the company's website for more information on products.

3. Attract competitors Customers

It facilitates to attract the customers from the competitors. When customers search for intended products the company's website also visible to them for a selection.

4. Improved Customer Service

Website provides an easier way to handle customer inquiries (online customer service). Further, the website can be used to provide answers to Frequently Asked Questions (FAQ). Also the company can provide a real time customer service using the website chat option which would result in high customer satisfaction.

5. Creditability

In today's modern world, it is an expectation for any reputable company to have some kind of online presence which contains useful information about the company and its products, management, location provide more credibility toward the company.

6. Ease of access for customers

Having a website means customers are always able to find the company anytime, anywhere. Even outside of business hours, website continues to find and secure new customers. When customers search the products which they intend to purchase, there is a high probability to select the products and place orders when they are readily available in company's website.

7. Information exchange

A website provides a quick and easy way of communicating information between buyers and sellers. (Eg: Chat option available in Website)

8. Minimize costs

The company can use the website to sell its products and services directly to customers. Using the website, the company can reduce some overhead costs such as utilities, staff costs, etc.

9. Market expansion

As website is accessible to anybody in the world the ability to break through geographical barriers has been easier. Anyone from any country will be able to find the company and such person will be a potential customer of the company.

10. Facilitates digital marketing

Digital marketing/ advertising activities can be implemented on web platform in an effective manner using multimedia. Further implementing a website is a good platform for the business to showcase their corporate social responsibility (CSR) initiatives.

(04 marks)

(c)

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

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1. Reduce paper usage
   - Customer/ delivery-partner/ business related communication can be done on electronic platforms such as using emails/ SMS/ instant messaging to reduce paper usage.
   - Use effective electronic marketing methods such as social media and social networking platforms to reduce paper wastage.

2. Optimize the usage of Hardware Peripherals
   - Power-down the CPU and all peripherals during extended periods of inactivity
   - Try to do computer-related tasks during contiguous, intensive blocks of time, leaving hardware off at other times.
   - Power-up and power-down energy-intensive peripherals such as laser printers according to need.

- Use the power- management features to turn off hard drives and displays after several minutes of inactivity.

3. Use clouds-based platforms (ex- IAAS) for all data processing activities to minimize use of computers and related peripherals.

4. Introduce and implement power management policies within the business.

5. Dispose of e-waste according to federal, state and local regulations.

6. Employ alternative energy sources for computing workstations, servers, networks and data centers.

(04 marks)

(d)

Chapter 02 - Information Technology Infrastructure

1. Hardware Platform

Personal computers, server computers, networking equipment can be maintained at packaging and collecting centers to provide required computer facilities. Also, Tablets and Mobile devices can be provided to employees to track warehouse items.

2. Application Software / Operating System Software Platform

Suitable operating system can be implemented to run on computers with necessary application software to improve office automation at all different c enters.

This provides platform for client computers, mostly Windows based operating systems and for servers, dominated by the various forms of the Windows, UNIX or Linux based operating system. Operating systems are software that manage hardware resources and activities of the computer and act as an interface for other application software to run and for the users.

3. Bespoke Application / Software

Customized software solution with user friendly interface can be introduced to enter / retrieve customer details, product details, payments, delivery details.

4. Networking/ Telecommunications platforms to connect devices within collection centres and packaging centres.

Networks and telecommunications provide backbone for connecting nodes with in the business network as well as the outside world. For that reason, companies spend billions on telecommunications equipment and services. Most local area networks, as well as wide area enterprise networks, use the TCP/ IP protocol suite as a standard. A wired or wireless (3G/4G) network with a higher bandwidth connects all collecting centers and packaging centers to setup real-time communication and exchange of information.

5. Database Management System

Network connected to a centralized database, which is then connected to customize ERP can be implemented, so that collected data / information can be maintained centrally and efficiently.

6. E-Commerce Website

Website can be maintained with available cross platforms, so that customers can remotely access / browse for products and place orders.

7. Customized Enterprise Resource Planning (ERP) Software

This can be implemented to connect different functional information systems in different departments of the organization. Enterprise applications are important component of overall IT infrastructure of the organization. The largest providers of enterprise application software (ERPs) are SAP and Oracle. Another component included in this category is middleware software, supplied by vendors such as IBM and Oracle, which provide integration facilities for company's existing application systems.

8. Internet Platforms

Networking infrastructure which is supported by necessary hardware and software to interconnect with customers and suppliers.

9. Consulting and Systems Integration Services

Many companies face difficulties finding necessary staff, skills, budgets, or the necessary experience to set up and maintain its entire IT infrastructure. Implementing a new infrastructure requires substantial amount of changes in existing business processes and procedures, training and education and software integration. The company can obtain the consulting services provided by these expertise.

(08 marks)

(e)

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

1. Restrict Unauthorized Access

Setting up a firewall can prevent unauthorized external access to your system. A firewall acts as a barrier that protects internal network devices from many malware threats. It actively monitors the data packets that come from outside networks and checks whether they are safe or not. If it sees any malicious data packet, it gets blocked by the firewall. By blocking certain kinds of data, the firewall protects network and safeguards company's data from malicious attacks.

2. Use Strong Passwords

Passwords should be easy to remember and difficult to guess. It is best not to use words such as child's name, pet's name or favorite sports team as this type of information might be easily guessed. Use random words to create a strong passwords, numbers and symbols can still be used. Hackers could potentially use email to access many of personal accounts and find out personal information, such as bank details, address or date of birth, leaving users vulnerable to identity theft or fraud. For most important accounts, if it is available, use Two-Factor Authentication. This means involving a second step after entering ones password e.g. providing a fingerprint, answering security question, or entering a unique code sent to user's mobile device.

3. Move away from using unsupported software

This is when the supplier no longer updates software e.g. operating systems such as Windows, apps, web browsers, etc. Although the software will continue to operate, it will no longer protect against online threats through updates or patching (a software update, often relates to improving security). If a security weakness is discovered, software can be compromised and become vulnerable to a cyber-attack. For benefits to be gained from up-to-date security measures, such as improved speed and efficiency, only use supported software on computer systems and devices.

4. Always download and install the latest software and app updates

Software updates are designed to fix weaknesses in software and apps which could be used by hackers to attack device. Installing them as soon as possible helps to keep devices secure. One can set desktops, laptops, smart phones and tablets to automatically install software updates when an updates are available.

5. Run up-to-date anti-virus software

Computers, tablets and smart phones can easily become infected by small pieces of software known as malware. Common types include viruses or spyware and ransom-ware. To help prevent infection, install internet security software, like anti-virus and/or anti-malware on devices and keep it up to date for better protection.

6. Delete suspicious emails and avoid clicking on unknown attachments or links

Email is an excellent communication tool but is frequently used to deliver unwanted or unwelcome material, often referred to as 'spam' or 'junk' email. At best, this is annoying and at worst it can be malicious, causing considerable harm to computers and organization. Delete suspicious emails and do not click on links or open attachments in these emails before delete them as they may contain fraudulent requests for information or contain links to viruses. Do not respond to such 'phishing' emails.

7. Back up data

If the device is infected by a virus or accessed by a hacker, the data may be damaged, deleted, stolen or even held to ransom, which means users will not be able to access it. Companies should therefore safeguard their most important data by backing up to a secure external hard drive or storage system based in the Cloud.

8. Train Staff to be Cyber Aware

Make sure staff is trained to know the benefits of operating digitally, but are also aware of cyber security threats and how to deal with them. Due to the rapid development and changes in digital technology, it is a good idea to add cyber security to annual training plans / matrix.

9. Manage security relationships with suppliers and partners

As organizations grow and work with more suppliers and partners, companies become a link in one or more complex supply chains. It is important to observe good practice (and in many cases, compliance) because vulnerabilities will place not only the own organization at risk, but also others within the supply chain.

(06 marks)

(Total 25 marks)

End of Section C

Notice:

These answers compiled and issued by the Education and Training Division of AAT Sri Lanka constitute part and parcel of study material for AAT students.

These should be understood as Suggested Answers to question set at AAT Examinations and should not be construed as the "Only" answers, or, for that matter even as "Model Answers". The fundamental objective of this publication is to add completeness to its series of study texts, designs especially for the benefit of those students who are engaged in self-studies. These are intended to assist them with the exploration of the relevant subject matter and further enhance their understanding as well as stay relevant in the art of answering questions at examination level.