

CA



THE INSTITUTE OF
CHARTERED ACCOUNTANTS
OF SRI LANKA

SUGGESTED SOLUTIONS

07204 – Information Management

Certificate in Accounting and Business II Examination
September 2013

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA

Answer No. 01

- (a) RAD is more suitable for TECHINFO as they have to develop the information systems quickly.

The phases of RAD are:

- **Business Modeling:** The business model for the product under development is designed in terms of flow of information and the distribution of information between various business channels. A complete business analysis is performed to find the vital information for business, how it can be obtained, how and when is the information processed and what are the factors driving successful flow of information.
- **Data Modeling:** The information gathered in the Business Modeling phase is reviewed and analyzed to form sets of data objects vital for the business. The attributes of all data sets is identified and defined. The relation between these data objects are established and defined in detail in relevance to the business model.
- **Process Modeling:** The data object sets defined in the Data Modeling phase is converted to establish the business information flow needed to achieve specific business objectives as per the business model. The process model for any changes or enhancements to the data object sets is defined in this phase. Process descriptions for adding , deleting, retrieving or modifying a data object are given.
- **Application Generation:** The actual system is built and coding is done by using automation tools to convert process and data models into actual prototypes.
- **Testing and Turnover:** The overall testing time is reduced in RAD model as the prototypes are independently tested during every iteration. However the data flow and the interfaces between all the components need to be thoroughly tested with complete test coverage. Since most of the programming components have already been tested, it reduces the risk of any major issues.

(05 marks)

- (b)

Advantages of the waterfall model

- It allows for departmentalization and managerial control.
- Simple and easy to understand and use as it is a linear model.
- Easy to manage due to the rigidity of the model – each phase has specific deliverables and a review process.
- Phases are processed and completed one at a time and no overlapping or iterative steps.
- Works well for smaller projects where requirements are very well understood.
- A schedule can be set with deadlines for each stage of development and a product can proceed through the development process

(04 marks)

Disadvantages of the waterfall model

- No working software is produced until late during the life cycle.
- High amounts of risk and uncertainty.
- Not a good model for complex and object-oriented projects.
- Poor model for long and on going projects.
- Not suitable for the projects where requirements are at a moderate to high risk of changing. So risk and uncertainty is high with this process model.
- It is difficult to measure progress within stages.
- Cannot accommodate changing requirements.
- Adjusting scope during the life cycle can end a project.
- Integration is done as a "big-bang. at the very end, which doesn't allow identifying any technological or business bottleneck or challenges early.
- Without completing one stage cannot go to next stage

(07 marks)

(c) Main categories and areas of testing the feasibility

- **Social Feasibility**

This area addresses the influences that a proposed project may have on the social system in the project environment. The ambient social structure may be such that certain categories of workers may be in short supply or non-existent. You must assess the impact of the project on the social issues/status of the project participants to ensure compatibility.

- **Economic Feasibility**

This area involves the feasibility of the proposed project to generate economic benefits. A cost-benefit analysis and a breakeven analysis are important aspects of evaluating the economic feasibility of new projects. You should translate the tangible and intangible aspects of a project into economic terms to provide a consistent basis for evaluation.

Economic analysis could also be referred to as cost/benefit analysis. It is the most frequently used method for evaluating the effectiveness of a new system. In economic analysis the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system. An entrepreneur must accurately weigh the cost versus benefits before taking an action.

- **Technical Feasibility**

Technical feasibility refers to the ability of the process to take advantage of the current state of the technology in pursuing further improvement. You should consider the technical capability of the personnel as well as the capability of the available technology. You also need to analyze technology transfer between geographical areas and cultures to understand productivity loss (or gain) due to differences

- **Operational Feasibility**

Operational feasibility is dependent on human resources available for the project and involves projecting whether the system will be used if it is developed and implemented. Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

Operational feasibility reviews the willingness of the organization to support the proposed system. This is probably the most difficult of the feasibilities to gauge. In order to determine this feasibility, it is important to understand the management commitment to the proposed project. If the request was initiated by management, it is likely that there is management support and the system will be accepted and used. However, it is also important that the employee base will be accepting of the change.

- **Human factor feasibility**

This is the most important component of successful system implementation. It includes end users and managers of the system. The system development is not successful if the end users do not accept it. Under this study we assess the degree of resistance to the proposed system, the perceived role of the end users in the development process and the current state of human resources available to conduct the project and to manage and use the system on completion.

- **Legal / political feasibility**

This includes a thorough analysis of any potential legal ramifications resulting from construction and implementation of the new system. Such legal issues include copyright or patent infringements, violation of existing antitrust laws etc.

(08 marks)
(Total 20 Marks)

Answer No. 02

(a) List the components of a CBIS that TECHINFO can consider and briefly explain each component.

(i) Hardware

TECHINFO will require to Collect data, enter data into systems, process data, produce outputs, disseminate information and store data.

TECHINFO will require few set of devices (Personal Computers) which support the major functions of an information System including the peripheral devices such as input output devices.

(ii) Software

Set of programs that enable the hardware to process data, providing life and make them functions . It includes Operating System, System software, Application software. TECHINFO will need to develop the application software to suit its requirement of having an MIS, an EIS and a web based information system.

(iii) Database

Database is a group of related files. Data are typically organized in a database, for the smooth operation of an information system. There can be flat database or Relational Database. TECHINFO will require to have organizational details, programme/course details, student profile details, academic details and financial (fee related) details in databases.

(iv) Telecommunication Network

Network is a collection of computers and devices interconnecting by communication channels or lines, that facilitate communication and allow sharing of resources, and information among interconnected devices in the information system. TECHINFO will require to link the laboratories, administration offices, Colombo branches and new buildings with a LAN as they are situated in the same premises. The branch in Galle can be linked with the web-based system.

(v) Procedures

Procedures are a set of instructions, indicating how to combine the above components in order to process information and the desired output. Since TECHINFO deals with confidential information w.r.t. student marks/grades, the company will require very strict procedures as to who can access such information. There are different levels of information that are given to different staff members that need to follow procedures which are agreed on as policies..

(vi) Peoples

Peoples in a system can be categorized into two groups; individuals who work with the system and the individuals who use the system. Individuals who work with the system are the Academic director, Coordinators, coordinators of programmes, course coordinators and teachers as well as systems administrators, network administrators as well as systems developers if necessary.

- (b) Categorize the Information into different levels as used in TECHINFO and explain briefly each category giving relevance to the institute.

Managers need variety of information for their decision making. Senior managers need more detailed information to plan business. Middle managers usually need more detailed information to help them monitor and control business activities. Employees at the operational level need information to help them carry out their duties. Information of these different levels varies as they are involved in different types of decision making.

Information required by these different levels can be categorized as Operational information, Tactical Information, and Strategic Information.

Operational Information.

Operational level information is information that is required to the day to day transaction in the organization.

This information is useful again and again at the operational level to solve the structured problems. These structured problems can be solved using predefined procedures. The effects of the structured problems are short term and effect of the decision is narrow. Structured problems are identified as programmable questions. Most of the information are easy to understand and every simple. TECHINFO will have the teachers and administrative staff handling the fee related and marks related information at this level.

Tactical Information

Tactical information are consumed by the middle level managers to solve the tactical problems. Middle level managers solve semi-structured problems. Semi-structured means it is a combination of features of the structured and unstructured problems. The effects of the tactical decision are middle level. TECHINFO programme and course coordinators will have eLearning systems and MIS related information that are handled at this stage.

Strategic Information

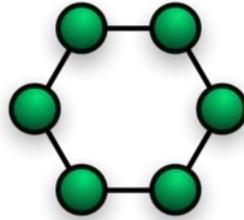
Strategic Information is used to solve strategic problems. Strategic problems are unstructured problems that cannot be solved using predefined procedures. Launching a new product, changing prices etc. are some examples. Effect of strategic decision are long term and also affect the entire organization. The Academic director and the programme directors will be handling higher level information about patterns of student registrations, new courses, new affiliations with other universities and will use the EIS and the web based information system to get information.

(Total 20 Marks)

Answer No. 03

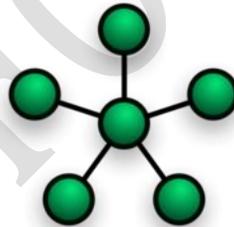
(a) (i) **Ring Topology**

A network topology is a physical and logical arrangement. Draw and explain the following network topologies.



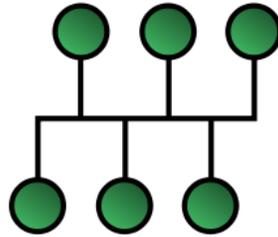
In a ring topology, the nodes are connected in a ring and data travels in one direction using a control signal called a 'token'. That is, all of the nodes are connected in a closed loop. Messages travel around the ring, with each node reading those messages addressed to it. One main advantage to a ring network is that it can span larger distances than other types of networks, such as bus networks, because each node regenerates messages as they pass through it.

(ii) **Star topology**



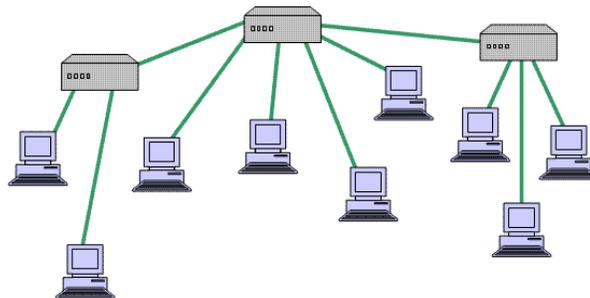
Star networks are one of the most common computer network topologies. In its simplest form, a star network consists of one central switch, hub or computer, which acts as a conduit to transmit messages. This consists of a central node, to which all other nodes are connected; this central node provides a common connection point for all nodes through a hub. In star topology, every node (computer workstation or any other peripheral) is connected to central node called hub or switch. The switch is the server and the peripherals are the clients. Thus, the hub and leaf nodes, and the transmission lines between them, form a graph with the topology of a star. If the central node is passive, the originating node must be able to tolerate the reception of an echo of its own transmission, delayed by the two-way transmission time (i.e. to and from the central node) plus any delay generated in the central node. An active star network has an active central node that usually has the means to prevent echo-related problems. The star topology reduces the chance of network failure by connecting all of the systems to a central node.

(iii) **Bus Topology**



In local area networks where bus topology is used, each node is connected to a single cable. Each computer or server is connected to the single bus cable. A signal from the source travels in both directions to all machines connected on the bus cable until it finds the intended recipient. If the machine address does not match the intended address for the data, the machine ignores the data. Alternatively, if the data matches the machine address, the data is accepted. Since the bus topology consists of only one wire, it is rather inexpensive to implement when compared to other topologies. However, the low cost of implementing the technology is offset by the high cost of managing the network. Additionally, since only one cable is utilized, it can be the single point of failure. If the network cable is terminated on both ends and when without termination data transfer stop and when cable breaks, the entire network will be down.

(iv) **Tree Topology**



This particular type of network topology is based on a hierarchy of nodes. The highest level of any tree network consists of a single, 'root' node, this node connected either a single (or, more commonly, multiple) node(s) in the level below by (a) point-to-point link(s). These lower level nodes are also connected to a single or multiple nodes in the next level down. Tree networks are not constrained to any number of levels, but as tree networks are a variant of the bus network topology, they are prone to crippling network failures should a connection in a higher level of nodes fail/suffer damage. Each node in the network has a specific, fixed number of nodes connected to it at the next lower level in the hierarchy, this number referred to as the 'branching factor' of the tree. This tree has individual peripheral nodes.

(b) **Discuss the advantages and disadvantages of wireless networks.**

Advantages of wireless networks

- **Convenience** – The wireless nature of such networks allows users to access network resources from nearly any convenient location within their primary networking environment (a home or office). With the increasing saturation of laptop-style computers, this is particularly relevant.
- **Mobility** – With the emergence of public wireless networks, users can access the internet even outside their normal work environment. Most chain coffee shops, for example, offer their customers a wireless connection to the internet at little or no cost.
- **Productivity** – Users connected to a wireless network can maintain a nearly constant affiliation with their desired network as they move from place to place. For a business, this implies that an employee can potentially be more productive as his or her work can be accomplished from any convenient location.
- **Deployment** – Initial setup of an infrastructure-based wireless network requires little more than a single access point. Wired networks, on the other hand, have the additional cost and complexity of actual physical cables being run to numerous locations (which can even be impossible for hard-to-reach locations within a building).
- **Expandability** – Wireless networks can serve a suddenly-increased number of clients with the existing equipment. In a wired network, additional clients would require additional wiring.
- **Cost** – Wireless networking hardware is at worst a modest increase from wired counterparts. This potentially increased cost is almost always more than outweighed by the savings in cost and labor associated to running physical cables.

(04 marks)

Disadvantages of wireless networks

- **Security** – To combat this consideration, wireless networks may choose to utilize some of the various encryption technologies available. Some of the more commonly utilized encryption methods, however, are known to have weaknesses that a dedicated adversary can compromise.
- **Range** – The typical range of a common 802.11g network with standard equipment is on the order of tens of meters. While sufficient for a typical home, it will be insufficient in a larger structure. To obtain additional range, repeaters or additional access points will have to be purchased. Costs for these items can add up quickly.
- **Reliability** – Like any radio frequency transmission, wireless networking signals are subject to a wide variety of interference, as well as complex propagation effects that are beyond the control of the network administrator.
- **Speed** – The speed on most wireless networks (typically 1-54 Mbps) is far slower than even the slowest common wired networks (100Mbps up to several Gbps). However, in specialized environments, the throughput of a wired network might be necessary.

(07 marks)

(Total 15 Marks)

Answer No. 04

- (a) Explain briefly what are “Enterprise Wide Systems”

Enterprise wide system collect data from various key business processes in different functional areas and store those data in a central repository where they can use by other parts of the business. Managers can have more access to more precise and timely information for coordinating the daily operations of the business. This facilitate the managers to get a corporation –wide view of business processes and information flows.

(3 marks)

- (b) Name FOUR examples of Enterprise Wide Systems and briefly explain the usage of each (four) system citing the advantages

- (i) Enterprise Resource Planning System

Information that was previously fragmented in different systems can seamlessly flow through throughout the firm so that it can be shared by business processes in Manufacturing, Accounting, Human Resources, and other areas . Discrete business processes from Sales, Production, Finance and Logistics can be integrated into company-wide business processes that flow across organizational levels and functions.

When a Sales representative enter a customer order in Town A, the data flows automatically to others in the company who need to see them. The factory in Town B receive the order and begin production or replenishment. The Warehouse in Town C (or B) can check its stock of parts and replenish wherever the factory has depleted. This system stores the production information where it can be accessed by customer service reps to track the progress of the order through every step of the manufacturing process. Updated sales and production data automatically flow through accounting dept . The system transmit information to the Payroll Dept to calculate any payments to Sales reps etc. The system automatically update Accounts, Balance Sheet etc, data on sales, data on inventory and production forecast , production costs etc.

- (ii) Supply chain management system (SCM)

Supply chain management systems (SCM) help an organization to manage its relationships with suppliers, business partners, distributors, delivery agents etc to optimize the planning, sourcing, manufacturing and delivery logistics of products and services with timeliness.

SCM systems are considered as Inter-organizational systems as they automate the flow of information across organizational boundaries. The ultimate objective of the SCM system is to get the right amount of their products from their sources to their point of consumption with least amount of time and with lowest cost. These system are built using, intranets, extranets and the internet.

(iii) Customer relation management system (CRM)

Business now see Customers as a valuable asset which cannot afford to lose. The concept of Customer Relationship Management has received considerable attention from organizations and Customer Relationship Management System has evolved. They focus on coordinating all of the business process surrounding the company interaction with its customers in Sales, Marketing, service to optimize revenue, customer satisfaction, and customer retention. The ideal CRM system provide s end-to-end customer care from receipts of an order through product delivery.

In the past customer information were in bits and pieces, stored by different functional units of the business. CRM system try to solve problem by integrating the firm's customer –related processes and consolidating customer information from multiple communication channels, telephone, email, wireless devices or the WWWeb so that the Firm can show one coherent Face to all.

CRM systems examine customers from different perspectives and use a net of integrated applications to address all aspects of the customer relationships. A good CRM can answer a series of “What –If” type of quarries to priorities customers on various scenarios.

(2 marks)

(iv) Knowledge Management System (KMS)

KMS collect all relevant knowledge and experience in the organization and make it available to other desirable s wherever, whenever it is needed to support business processes and management decisions. KMC can get knowledge from both external and internal sources.

KMS can capture knowledge and support processes for acquiring, storing, distributing, applying knowledge, enterprise systems, systems for creating corporate knowledge directories of employees with special areas of expertise, office systems and knowledge work systems.

(2 marks)

(Total 15 Marks)

Answer No. 05

(i) Operating Systems

Operating system (OS) is the most fundamental software sitting on a computer hardware. When a computer is turned on, OS is loaded into the priority area of the RAM – Random access memory from a storage media such as a hard disk. Thereafter the computer will be have according to the basic instructions of the OS. By loading different Operating systems at different times, the same computer hardware can be set to behave differently. Improved version of the same OS will carry advanced processing instructions. The hardware of a computer has to be examined to gain / select a suitable OS and it should work with the hardware. The BIOS (Basic Input –Output System) of a computer is a set of software stored in a chip of the mother board. BIOS gives the very initial – fundamental instructions at the start which has to be compatible with the OS.

(ii) Utility Programs

Utility Programs are system support programs meant to perform routine support functions. These are the functions generally required by the average user in day to day operation of the computer. Utility programs are used for separate functions such as file management (creating, modifying, copying, renaming ...deleting a file) file search, diagnostic routines to check the machine, disk formatting, disk trouble shooting, (Scan disk) Backup etc. There can be other Utility programs such as basic editors which could be selected by the user to purchase.

(iii) Drivers

Drivers are a special set of software written to communicate between some hardware attached to the computer such as a Printer. The communication protocol between the attached hardware and the computer varies from one to another type . When a proper driver is selected and loaded from a given CDROM or downloaded from the internet, the Operating system is capable of speaking to the device attached such a printer through this driver software. If two different brand /model printers are connected to the same computer, in general, two different drivers are needed to function the two printers. Similarly, there may be other devices such as scanners, disks which need their relevant drivers in the set-up.

(iv) Antivirus Software

Antivirus software are programs written by expert in virus detection to detect virus type intruders in a computer system and deal with it. Some viruses could detected and deleted, some may not be deleted but quarantined. As viruses are introduced in to the computer world, the computers get contaminated through external connections such as Internet, CDs. Pendrives etc. Therefore, it is vital to keep Antivirus software updated always, because it can change the data base of the viruses known and the engine to remove them. There are popular marketed brands of Antivirus software such as Norton, MacAfee, Kasperskey, AVG and there can be open source ones for relatively low cost circulation.

- (v) Networking Software
Computer networks are two or more computers and devices interconnected using communication medium. This involves of connecting additional hardware devices such as modems, hubs, switches, wiring or microwave connectivity. Within computer too it is necessary to add more circuit boards necessary for connectivity and communication such as Ethernet cards. Thus there should be special software now for handling information flowing in the LAN or WAN (other nets too) with necessary protocols and protections. Thus Networks are facilitated by Network Software properly installed in the components of the software.

(Total 15 Marks)

Answer No. 06

- (a) List and briefly explain,
- i. Advantageous
 - a. Low cost
 - b. Quick implementation
 - c. Can obtain services from an application specialists
 - d. Updating facility available free or for a nominal cost
 - e. Compatibility with other software systems is high
 - f. Trainee staff are available in job market
 - ii. Disadvantageous
 - a. Difficult to find software that meets all the requirements needed by the company.
 - b. After buying software, the company has to depend on the selected software with little room for customization.
 - c. Supplier can increase the cost of the extension of the license and updates
 - d. Although initially the selected software suited the requirements of the company, with the expansion of the company it may be required to change the software totally, causing continuity issues etc.
 - e. The supplier may go out of business.
- (b) List and explain Five (4) Essential Core Modules that should be available in the selected Accounting Package.
- a. Accounts receivables- where the company enter the money received
 - b. Accounts payable - Where the company enters the bill and pays the owes
 - c. General Ledger – the company’s Book
 - d. Billing- where the company produces invoices to clients / customers
 - e. Stock – Inventory – Where the company keep control of the inventory
 - f. Purchase Order – where the company orders inventory
 - g. Sales Order – where the company record customer orders for the supply of inventory
 - h. Cash Book – Where the company records collection and payments

(Total 15 Marks)

Answer No. 07

Business- to- Consumer eCommerce (B2C) involves relating products and services to individual consumers. Using the Internet, Payments made through valid Credit Cards or Debit Cards.

(a) List and explain briefly the (i) Advantageous and (ii) Disadvantageous to customers (buyers) in using the above eCommerce.

(i) Advantageous

- a. NO checkout queues
- b. Reduced prices
- c. You can shop anywhere in the World
- d. Easy access 24 hours a day
- e. Wide selection to cater for all consumers
- f. No hassel of transport / leave from work place to do shopping
- g. You feel that you are in a One-Stop shop for every thing

(ii) Disadvantageous

- a. Unable to examine products personally
- b. Not every one is connected to the internet
- c. There is a probability of Credit Card frauds
- d. On average only 1/9th of stock is available on the stock
- e. Return / Exchange of goods (not in correct size etc.) will be very difficult and costly.
- f. Cannot negotiate the price.

(b) eSriLanka, eGovernment Program of Sri Lanka has initiated services (applications) to be rolled-out in the Country such as ePensions and eRevenue Licences. Further, it is announced that “Cloud Computing” will be introduced to the public service applications.

Briefly explain what is meant by “Cloud Computing”

Cloud computing is a general term for anything that involves delivering hosted services over the Internet. A cloud service has the following distinct characteristics.

- It is sold on demand – in time units-variable, - user can select at the given time according to the usage. Work at high speed .
- A cloud can be private or public.
Public cloud can be used by any one , individuals or companies
Private clouds are meant for a limited number in private users in a closed manner,
- There is a growing trend to use Accounting Information systems over cloud systems
- Majority of clouds service providers charge for the volume of usage.
- When firms grow and need more capacity/ processing power, it is easy to obtain power as and when necessary.

(c) mobile Commerce (mCommerce) use is becoming popular even among ordinary citizens.

Briefly explain the use of mCommerce.

Mobile Commerce is the term used to refer to the growing practice of conducting financial and promotional activities with the use of wireless using mobile hand held phones.

Sale promotions by messages sent to mobile phones, sending cash equivalents, price listing are some of the applications already popular. Mobile users can opt for this service with a nominal entry fee charged by the telephone service providers.

(Total 15 Marks)

Answer No. 08

- (a) With respect to software development process, when and how should the software quality management process should be organized? Explain briefly.

Software quality management process should start before starting the development process and create the quality plan. In each phase of software development process produce a quality review report.

Quality management provides an independent check on the software development process. The deliverables from the software process are input to the quality management process and are checked to ensure that they are consistent with organizational standards and goals.

Quality management should be separated from project management so that quality is not compromised by management responsibilities for project budget and schedule. An independent team should be responsible for quality management and should report to the management above the project management level. There must be a commitment from management for quality.

(6 marks)

- (b) List the different aspects (Hint: 6 Aspects) and briefly explain the Structure of a Quality Management Plan.

Structure of Quality Management Plan

- (i) Organization Quality Policy
Describe organization quality standards and procedures
- (iii) Project scope
Describe the project scope
- (iv) Deliverables and acceptance criteria
List project deliverables, including contact deliverables and milestone checklist. For each deliverables, describe the acceptance criteria. List relevant quality standards for each deliverables.
- (v) Quality Assurance activities.
Define quality assurance activities for the project
- (vi) Project Monitoring and Control
Following needs to be defined
 - What audit and reviews are required and when they will be held
 - How variance to acceptance criteria will be reported and resolved
 - How control information will be collected
 - How information will be used to control processes and deliverables
- (vii) Project Team quality responsibilities.
Describe quality related responsibilities of the project team

(9 marks)

(Total 15 Marks)



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