

# CAT

**Certified Accounting Technicians Examination**

**Stage: Level 2 L2.2**

**Subject Title: Information Systems**

**Examination Format Revision Pack**

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# INFORMATION SYSTEMS

## LEVEL 2

### L 2.2 EXAMINATION FORMAT QUESTIONS & SOLUTIONS

#### NOTES

**Section A** - You are required to answer Questions 1 and 2.

**Section B** - You are required to answer any **three** out of Questions 3 to 6.

(If you provide answers to all of Questions 3 to 6, you must draw a clearly distinguishable line through the answer not to be marked. Otherwise, only the first answers to hand for these four questions will be marked.)

#### **TIME ALLOWED:**

3 hours, plus 10 minutes to read the paper.

#### **INSTRUCTIONS:**

During the reading time you may write notes on the examination paper but you may not commence writing in your answer book

Marks for each question are shown.

The pass mark required is 50% in total over the whole paper.

**Start your answer to each question on a new page.**

You are reminded that candidates are expected to pay particular attention to their communication skills and care must be taken regarding the format and literacy of the solutions. The marking system will take into account the content of the candidates' answers and the extent to which answers are supported with relevant legislation, case law or examples where appropriate.

List on the cover of each answer booklet, in the space provided the number of each question(s) attempted.

**Note Q 1 is from April 2011 and 2 is from August 2010**

**3 onwards are from Aug 2009**

Time Allowed: 3 hours, plus 10 minutes to read the paper.

## **SECTION A**

***Answer BOTH Question 1 and Question 2 in this Section. (Both Compulsory)***

1. Hibb Ltd., a steel manufacturing company, purchased an information systems package over a decade ago. The system focuses on daily transaction processing of stock, sales and purchasing and provides regular user summaries. Unfortunately, the output does not provide much of the necessary management information and as a consequence a Co-ordinator downloads output onto spreadsheets which are then manipulated, enhanced and emailed to users. Managers and Senior Managers often complain that even this information is inadequate for their needs. In response, Hibb has employed a business information consultancy firm to conduct a review of its information requirements. The consultancy firm reported that the existing system is outdated and much less functionally rich than more recent software on the market. The main issues and recommendations are summarised as follows:-

### *Purchase a new system*

Hibb should purchase a system (perhaps InfoTek) which provides more complete, relevant and timely information. The InfoTek system is easy to understand and navigate and would offer a more comprehensive analysis than the existing package provides, including historical statistics and comparison to prices charged by competitors. InfoTek also offers potential for further customisation to local needs through its display functions and flexible formats. Users (Senior Managers, Managers and Others) would be able to use the software efficiently straight away without additional training. Daily transaction processing routines would remain unchanged.

### *Implementation of the new system*

The system should be implemented by direct changeover because Hibb's network servers have insufficient capacity to support both new and old systems. The installation should take place over a weekend to minimise disruption. Once installed, systems maintenance should be minimal.

### *Redesign of Co-ordinator's role*

This role should be redesigned so that the existing post-holder becomes responsible for validating InfoTek output, co-ordinating information enhancements and providing support and advice to users. Hibb's Managing Director is familiar with InfoTek through past working experience and agrees that it is a worthwhile package. She is, however, unhappy about how the consultants have conducted their review. In particular, she is concerned that very few Managers, Senior Managers and other information users have been involved in discussions. She also believes that any job design needs to concentrate on the characteristics of the post in order to gain maximum motivation and job performance. She therefore treats the findings and recommendations of the consultants with caution. A fellow Director has advised her not to implement the consultants' recommendations without further reference to the workforce as this might lead to staff resistance.

### **REQUIREMENTS:**

- a) Discuss the reasons why there may be user resistance to the introduction of the new system and explain the types of support that could be organised to help users utilise InfoTek efficiently. **(7 marks)**
  - b) Explain the issues Hibb should consider before successfully implementing the recommended system. **(9 marks)**
  - c) List and describe the options Hibb has if they choose not to develop their software in house. **(9 marks)**
- (Total: 25 Marks)**

2. Write brief notes on **ANY FIVE** of the following.
- (a) Digital goods.
  - (b) Knowledge management.
  - (c) Cloud Computing.
  - (d) XBRL.
  - (e) Methods of system implementation / changeover.
  - (f) Blog.
  - (g) Real options pricing models.

***Note: Each part carries 3 marks.***  
**(Total: 15 Marks)**

## **SECTION B**

***Answer ANY THREE of the four questions in this Section.***

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**3.**

- a) What is a DSS and how does it provide value for a business? **(8 Marks)**
  - b) What are the different decision-making levels and decision-making constituencies in organisations? How do their decision-making requirements differ? **(6 Marks)**
  - c) How do Executive Support Systems (ESS) enhance managerial decision making and provide value for a business? **(6 Marks)**
- (Total: 20 Marks)**

**4.**

- a) What security problems can be created by employees? **(5 Marks)**
  - b) Describe four types of Information Systems controls that could be employed by an organisation to make their systems more secure and assess how they provide business value. **(8 Marks)**
  - c) Describe the role of an MIS Auditor and explain how MIS auditing can enhance the control process. **(7 Marks)**
- (Total: 20 Marks)**

**5.**

- a) Name, describe and give an example of the three major categories of electronic commerce. **(6 Marks)**
  - b) Define the term 'Intranet'. Outline the main benefits and possible drawbacks of using an Intranet in a medium sized organisation. **(7 Marks)**
  - c) Define the term 'm-commerce' and list and describe three types of m-commerce services. **(7 Marks)**
- (Total: 20 Marks)**

**6.**

- a) What is customer relationship management? Why are customer relationship management systems so important today? **(6 Marks)**
  - b) How can the Internet and Internet technology facilitate supply chain management? **(6 Marks)**
  - c) What is an enterprise system and outline the challenges and benefits of using enterprise systems in an organisation. **(8 Marks)**
- (Total: 20 Marks)**

**END OF PAPER**

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## ***SUGGESTED SOLUTIONS***

### ***SOLUTION 1***

- a) Discuss the reasons why there may be user resistance and explain the types of support that could be organised to help users utilise InfoTek efficiently.

Identification of reasons for staff resistance (e.g. demotivation through exclusion, feelings of imposition, dispute of system benefits, lack of trust in consultants' judgement, group resistance through 'snubbing' of groups, etc.)

Discussion of each in a way that is relevant to the scenario.

Identify types of support (e.g. user manuals/quick reference guides, software embedded help feature, support structures, repositories of information, dedicated telephone support, support through regular communication, etc.)

Explain each in a way that is relevant to the scenario.

**(Definition – 1 Mark + Any 3 reasons + Any 3 supports similar to above x 1 marks each)**  
**(7 Marks)**

- b) Explain the issues Hibb should consider before successfully implementing the recommended system.

Identify potential issues (e.g. financial, relative costs and benefits, alternative systems, developing a system specification, system functionality, behavioural, technical, etc.).

Explain each issue in turn within the context of the scenario. Levels of answers may range as follows:-

**Limited answer:** Either listing of several issues with no explanation or one or two points only with limited explanation.

**Pass standard answer:** Some explanation of two or three issues relevant to the scenario. One mark per substantive point made.

**Strong answer:** Comprehensive explanation of several issues within the context of the scenario. One to two marks per substantive point made.

**(1 Mark each approach x 6 + 3 Overall)**  
**(9 Marks)**

- c) List and describe the options Hibb has if they choose not to develop the software in-house.

Candidates should explain at least three of the following:-

- Outsourcing
- Bespoke external development
- Off-the-shelf
- Software as a Service(SAAS)

**(3 Marks for each method x 3)**

**(9 marks)**

## ***SOLUTION 2***

3 Marks (2 Marks Definition, 1 Mark Business Value)

### **a) Digital goods**

In electronic commerce, digital goods is a general term that is used to describe any goods that are stored, delivered and used in its electronic format. Digital goods are shipped electronically to the consumer through email or download from the Internet. Usually when you purchase digital goods online, after payment has been received the merchant will provide you with your digital item as an e-mail attachment or they may provide you with a secure link where you can download the item.

Examples of digital goods include e-books, music files, software, digital images, Web site templates, manuals in electronic format, and any item which can be electronically stored in a file or multiple files.

Digital goods may also be called electronic goods or e-goods.

### **b) Knowledge management**

Knowledge management is the set of processes developed in an organisation to create, gather, store, disseminate, and apply the firm's knowledge. Knowledge management is the set of processes developed in an organization to create, gather, store, maintain, and disseminate the firm's knowledge. Knowledge management promotes organizational learning as it defines and codifies the organization's knowledge base. As the textbook points out, knowledge management enables the organization to learn from its environment and incorporate this new knowledge into its business processes.

Knowledge management systems enable the creation and support of knowledge networks, knowledge repositories, and communities of practice. Moreover, knowledge networks enable people to be linked, so that experts in a given area can be easily identified and share tacit knowledge. Knowledge management streamlines the workflow and provides tools for creating a knowledge repository.

### **c) Cloud Computing**

Cloud computing is Internet-based computing, whereby shared resources, software and information are provided to computers and other devices on-demand, like a public utility. It is a paradigm shift following the shift from mainframe to client-server that preceded it in the early '80s. Details are abstracted from the users who no longer have need of, expertise in, or control over the technology infrastructure "in the cloud" that supports them. Cloud computing describes a new supplement, consumption and delivery model for IT services based on the Internet, and it typically involves the provision of dynamically scalable and often virtualized resources as a service over the Internet. It is a by-product and consequence of the ease-of access to remote computing sites provided by the Internet.

The term cloud is used as a metaphor for the Internet, based on the cloud drawing used in the past to represent the telephone network, and later to depict the Internet in computer network diagrams as an abstraction of the underlying infrastructure it represents. Typical cloud computing providers deliver common business applications online which are accessed from a web browser, while the software and data are stored on servers.

### **d) XBRL**

XBRL (Extensible Business Reporting Language) is an XML-based format to define and exchange business and financial information. XBRL is a standards-based way to communicate business and financial information. These communications are defined by metadata set out in taxonomies. Taxonomies capture the definition of individual reporting concepts as well as the relationships between concepts.

The XBRL format is governed and marketed by a international consortium (XBRL International Incorporated) of approximately 600 organisations, including, companies, regulators, government agencies, infomediaries and software vendors.

XBRL International is supported by its jurisdictions - independent bodies, generally organised on a country-specific basis - that work to promote the adoption of XBRL and the development of taxonomies that define the information requirements of their particular domains. XBRL is being adopted around the world in order to migrate business information process from paper-based and legacy electronic proprietary formats more fully onto Internet oriented processes (both for external and internal reporting processes).

#### **e) Methods of system implementation / changeover**

Candidates may allude to any or all of the several types of adoption that can be used to implement a system. The types 'big bang', 'parallel adoption', 'phased adoption' and 'pilot' form the main types that are used to adopt a system. The big bang relates to the cosmological theory (Big bang) where the start of the cosmos happened at one moment in time. This is also the case with the big bang adoption type where the new system is adopted on one date.

In case of parallel adoption the old and the new system are running parallel so all the users can get used to the new system, but still can do their work using the old system. Phased adoption means that the adoption will happen in several phases, so after each phase the system is a little closer to be fully adopted by the organisation

#### **f) Blog**

A blog (a contraction of the term "web log") is a type of website, usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly displayed in reverse-chronological order. "Blog" can also be used as a verb, meaning to maintain or add content to a blog.

Many blogs provide commentary or news on a particular subject; others function as more personal online diaries. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. The ability of readers to leave comments in an interactive format is an important part of many blogs. Most blogs are primarily textual, although some focus on art, photographs, videos (Video blogging), music (MP3 blog), and audio (podcasting). As of December 2007, blog search engine Technorati was tracking more than 112,000,000 blogs.

The main types of blog are:

- Personal
- Employee
- Corporate

Blogs are usually created in business to promote the knowledge within a company or to raise the profile of a CEO to the status of industry leader on certain issues

**g) Real options pricing models**

In some cases, not all of the benefits of making this investment can be established in advance. Real options pricing models (ROPMs), which apply the same techniques for valuating financial options to systems investments, are useful for evaluating highly uncertain information system investments. In real options theory, the value of the IT project (real option) is a function of the value of the underlying IT asset (present value of expected revenues from the IT project), the volatility of the value in the underlying asset, the cost of converting the option investment into the underlying asset, the interest rate at which the company could invest the same amount of money as the investment without any risk, and the options time to maturity (length of time the project can be deferred). The disadvantages of this model are primarily in estimating all the key variables, especially the expected cash flows from the underlying asset, and changes in the cost of implementation.

### ***SOLUTION 3***

**a)** What is a DSS and how does it provide value for a business?

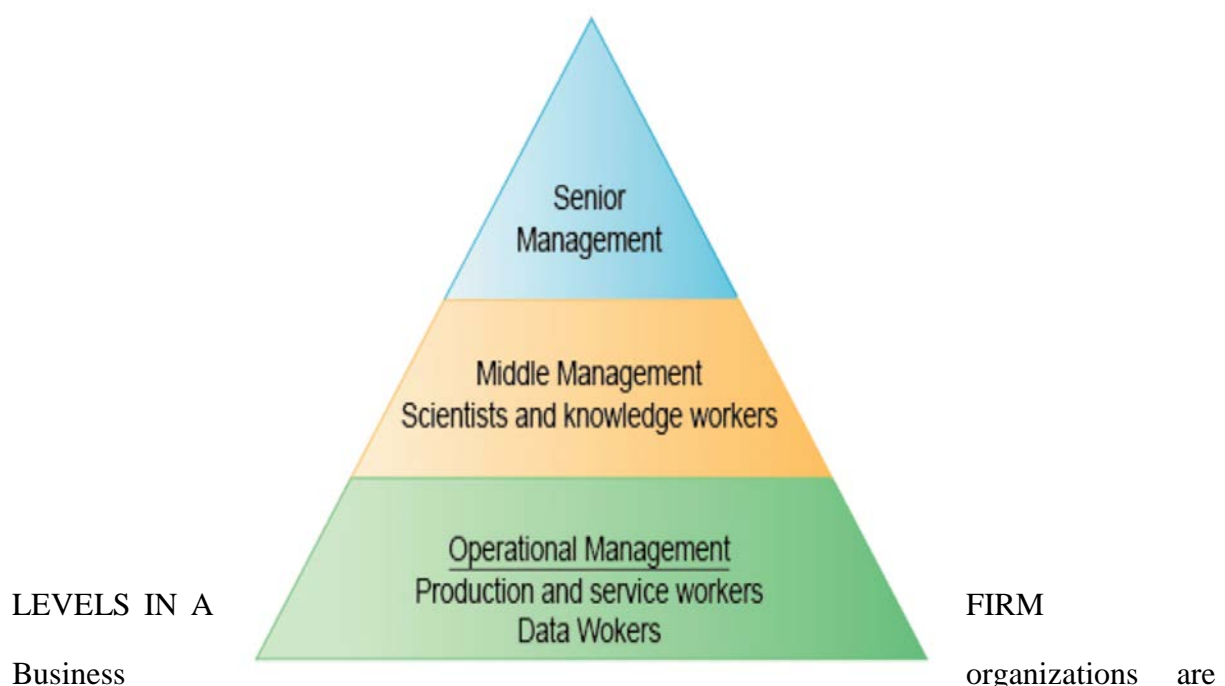
A management information system is especially helpful for handling routine management tasks. For non-routine decision-making, many managers use another type of system called a decision support system (DSS). As the name implies, a DSS is a computer system that supports managers in decision-making tasks. In the broadest sense a utilised spreadsheet program, could be designed for DSS purposes. After all, managers everywhere use spreadsheets to find answers to "What if?" questions and make decisions based on these sample scenarios. However, most managers reserve the term decision support system for a more specialised kind of software designed to create mathematical models of business systems. DSS can be described as a set of well-integrated, user-friendly computer based tools. From a management point of view there are four major functions of DSS, which include; What if Analysis, Model building, goal seeking and graphical analysis.

**(8 Marks)**

**(4 Marks – Definition + 4 Marks – Business Value)**

**b)** What are the different decision-making levels and decision-making constituencies in organisations? How do their decision-making requirements differ?

The key elements of an organization are its people, structure, business processes, politics, and culture. An organization coordinates work through a structured hierarchy and formal standard operating procedures. Managerial, professional, and technical employees form the upper levels of the organization's hierarchy while lower levels consist of operational personnel.



hierarchies consisting of three principal levels: senior management, middle management, and operational management. Information systems serve each of these levels. Scientists and knowledge workers often work with middle management.

Senior management makes long-range strategic decisions and ensures the firm's financial performance.

Middle management carries out the plans of senior management and operational management monitors the firm's daily activities. Knowledge workers such as engineers and scientists design products and create and distribute new knowledge for the organization. Data workers such as secretaries process the organization's paperwork. Production or service workers produce the products or services.

Experts are employed for the major business functions: the specialized tasks performed by organizations, which consist of sales and marketing, manufacturing and production, finance and accounting, and human resources.

An organization coordinates work through its hierarchy and business processes. These processes may be documented and formal, or informal, unwritten work processes, such as how to handle a telephone call.

Each organization has a unique culture, or fundamental set of assumptions, values, and ways of doing things, that are accepted by most of its members. Parts of an organization's culture can be found in its information systems. For example, UPS's organizational focus on customer service can be found in the package tracking system available to customers. Information systems may also reflect the organizational politics or conflicts that result from differing views and opinions in an organization.

Information systems are also a key component in the ability of management to make sense of the challenges facing a company and in management's ability to create new products and services, manage the company, and even re-create the organization from time to time.

**(6 Marks)**

**(3 Marks – Level + 3 Marks – Requirements)**



- c) How do Executive Support Systems (ESS) enhance managerial decision making and provide value for a business?

Executive support systems (ESS) help managers make unstructured and semi structured decisions. ESS focus on the information needs of senior management and combine data from both internal and external sources. The ESS creates a generalised computing and communications environment that can be focused on and applied to a changing array of problems. The ESS can help senior executives monitor organizational performance, track activities of competitors, spot problems, identify opportunities, and forecast trends.

**(6 Marks)**

**(3 Marks – Definition + 3 Marks – Capabilities)**

## ***SOLUTION 4***

**a)** What security problems can be created by employees?

The largest financial threats to businesses actually come from insiders, either through theft and hacking or through lack of knowledge. Malicious intruders may sometimes trick employees into revealing passwords and network access data through social engineering.

Employees can also introduce faulty data or improperly process data. This is also known as administrative error. Administrative error is difficult to deal with because it isn't caught until too late, and the consequences may be disastrous. Also, administrative error can occur at any level and through any operation or procedure in the company.

Not following security procedures in relation to receiving external information, emails, internet use etc.

**(5 Marks)**

**(4 Points x 1Mark + 1 Mark overall)**

Describe four types of information systems controls that could be employed by an organisation to make their systems more secure and assess how they provide business value.

For protection, a company must institute good security measures, which will include firewalls, investigation of personnel to be hired, physical and software security and controls, antivirus software, and internal education measures. These measures are best put in place at the time the system is designed, and careful attention paid to them. A prudent company will engage in disaster protection measures, frequent updating of security software, and frequent auditing of all security measures and of all data upon which the company depends. Full protection may not be feasible in light of the time and expenses involved, but a risk analysis can provide insights into which areas are most important and vulnerable. These are the areas to protect first:

- Input controls check the data for accuracy and completeness when they enter the system. There are specific input controls for input authorisation, data conversion, data editing, and error handling.

- Processing controls establish that data are complete and accurate during updating. Run control totals, computer matching, and programmed edit checks
- Output controls ensure that the results of computer processing are accurate, complete, and properly distributed.

Specifically, candidates may refer to :

- Firewalls prevent unauthorised users from accessing internal networks. They protect internal systems by monitoring packets for the wrong source or destination, or by offering a proxy server with no access to the internal documents and systems, or by restricting the types of messages that get through, for example, e-mail. Further, many authentication controls have been added for Web pages as part of firewalls.
- Intrusion detection systems monitor the most vulnerable points in a network to detect and deter unauthorised intruders. These systems often also monitor events as they happen to look for security attacks in progress. Sometimes they even can be programmed to shut down a particularly sensitive part of a network if it receives unauthorised traffic.
- Antivirus software is designed to check computer systems and drives for the presence of computer viruses. Often the software can eliminate the virus from the infected area. To be effective, antivirus software must be continually updated.

**(8 Marks)**

**(4 X 2 Marks each types + Business Value)**

**b) Describe the role of a MIS Auditor and explain how MIS auditing can enhance the control process.**

An MIS audit identifies all of the controls that govern individual information systems and assesses their effectiveness. To accomplish this, the auditor must acquire a thorough understanding of the operations, physical facilities, telecommunications, control systems, data security objectives, organisational structure, personnel, manual procedures, and individual applications of the company.

The auditor usually interviews key individuals, who use and operate a specific information system, concerning their activities and procedures. Application controls, overall integrity controls, and control disciplines are examined. The auditor traces the flow of sample transactions through the system and performance tests, using, if appropriate, automated audit software.

The audit itself lists and ranks all control weaknesses and estimates the probability of their occurrence. It then assesses the financial and organisational impact of each threat. It includes a section for notifying management of such weaknesses and for management's response. Management is then expected to devise a plan to counter the significant weaknesses

**(7 Marks)**

**(4 Marks – Requirements & Role + 3 Marks – Audit)**

## ***SOLUTION 5***

- a) Name, describe and give an example of the three major categories of electronic commerce.

The three major types of electronic commerce are business-to-consumer (B2C), business-to-business (B2B), and consumer-to-consumer (C2C).

Business-to-consumer involves retailing products and services to individual shoppers.

Business-to-business involves the sale of goods and services among businesses.

Consumer-to-consumer involves consumers selling directly to consumers. An example of consumer-to-consumer electronic commerce is eBay.com.

Electronic commerce transactions can also be classified based on the participants' physical connections to the Web. Participants can use wired networks or mobile commerce.

**(6 Marks)**

**(2 marks each category x 3)**

- b) Define the term 'Intranet'. Outline the main benefits and possible drawbacks of using an Intranet in a medium sized organisation.

Explanation of the term 'Intranet'. Outline the main benefits and possible drawbacks of using an Intranet in a medium sized organisation:

- Internal network that uses Internet technology
- Typically has connections to the Internet through Gateway Computers (protected by firewalls)
- Intranets are used for 'Internet style' transfer of information, but within a particular organisation or 'community'

**Benefits/Uses:**

- It is the least expensive way to set up a multimedia hypertext system
- User training is minimal, because web browsers provide a standard, simple and intuitive user interface
- It can use existing hardware and system software
- It can integrate information from different sources into a common view.
- Publish information to staff (policy manuals, newsletters, etc.)
- Individual department/employee Web pages
- Gathering data - time reports, schedules, customer visits
- Allows remote access to business
- Interactive apps - polling for opinions
- Training (e-Learning)
- Integration with corporate data (prices, product info and sales stats accounting, asset tracking, etc.)
- Video conferencing? VoIP?
- Inexpensive (relatively)
- Easier to keep users up to date
- Effective use of distributed computer resources
- Training easy (for 'net' users)
- Add-on applications (including multimedia) available
- Intranet Open standards
- Platform independence and portability
- Consistent and reliable platforms
- Support for multiple data sources and types
- Process distribution and scalability
- Ease of use (consistent and friendly user interfaces)
- The universal client provides a common interface to all services
- Shorter development times and reduced costs
- Collaboration
- Development tools that are integrated through the use of open standards
- Reduces certain business costs
- Removes 9 to 5 access to information
- Communications infrastructure

### **Disadvantages of Intranets**

- Security concerns (easy to hack)
- Bandwidth
- Measuring ROI (Return On Investment)
- Constant change
- Information needs to be continuously updated
- Technical support needed to maintain system

Intranet benefits include connectivity from most computing platforms, can be tied to internal corporate systems and core transaction databases, can create interactive applications with text, audio, and video, scalable to larger or smaller computing platforms as requirements change, easy-to-use, universal Web interface, low start-up costs, richer, more responsive information environment, and reduced information distribution costs.

Organisations are using intranets to create enterprise collaboration environments. Regardless of location, intranets allow organisational members to exchange ideas, share information, and work together on common projects and assignments.

In sales and marketing, intranets help oversee and coordinate the activities of the sales force. The sales force can obtain updates on pricing, promotions, rebates, customers, or information about competitors. The sales force can also access presentation and sales documents, which they can customise for specific customers. In the human resources area, intranets keep employees informed of company issues and policies, allow employees to access and update their personnel records, and take online competency tests. Further, job postings and internal job information can be made available to employees. Employees can enroll in health care, benefit plans, or company training seminars. In finance and accounting, intranets provide an online, integrated view of financial and accounting information in an easy-to-use format. In the manufacturing area, intranets integrate complex information across the plant floors or many plants, particularly in managing work flow and process control.

**(7 Marks)**

**(2 Marks – Definition, 2 Marks – Benefits, 2 Marks – Drawbacks + 1 Mark overall)**

- c) Define the term 'm-commerce' and list and describe three types of m-commerce services.

M-commerce uses the Internet for purchasing goods and services as well as for transmitting messages using wireless mobile devices. It is especially well-suited for location-based applications, such as finding local hotels and restaurants, monitoring local traffic and weather, and providing personalised location-based marketing. Mobile phones and handhelds are being used for mobile bill payment, banking, securities trading, transportation schedule updates, and digital music and game downloads.

Wireless technology helps businesses stay more easily in touch with customers, suppliers, and employees and provides more flexible arrangements for organising work. Companies can save on wiring offices and conference rooms by using wireless networks because they do not have to pull cables through walls. Wireless networks also make additions, moves, and changes much easier.

Wireless technology has also been the source of new products, services, and sales channels in a variety of businesses. Wireless technology increases productivity and worker output by providing anytime, anywhere communication and access to information, including the information resources of the Internet. Wireless communication helps businesses stay more easily in touch with customers, suppliers, and employees, and provides more flexible arrangements for organising work.

Wireless technology increases productivity and worker output by providing anytime, anywhere communication and access to information, including the information resources of the Internet. Employees can make productive use of formerly wasted slices of time between larger tasks.

**Describe three wireless applications in business. Give examples.**

Mobile applications are having a significant impact on customer relationship management (CRM), supply chain management (SCM), and health care.

- Mobile CRM applications provide additional support for sales and service activities at the point of customer interaction.
- Mobile wireless technology facilitates supply chain management by capturing data on the movement of goods as these events take place and by providing detailed, immediate information as goods move along supply chain partners. Radio frequency identification (RFID) systems provide a powerful technology for this purpose.

- Mobile technology is improving health care by delivering essential information to physicians and nurses who constantly move from place to place and capturing patient information for electronic record systems at the point of creation.

**(7 Marks)**

**(2 Marks – Definition + 5 Marks – Applications)**



## ***SOLUTION 6***

a) What is customer relationship management?

Why are customer relationship management systems so important today?

Customer relationship management: business and technology discipline that uses information systems to coordinate all of the business processes surrounding the firm's interaction with its customers in sales, marketing, and service.

Importance of customer relationships: Globalisation of business, the Internet, and electronic commerce have put more power in the hands of customers. Companies are realising that their only enduring competitive strength may be their relationships with their customers. Some say that the basis of competition has switched from who sells the most products and services to who "owns" the customer, and that customer relationships represent the firm's most valuable asset.

Companies with effective customer relationship management systems can realise many benefits, including increased customer satisfaction, reduced direct marketing costs, more effective marketing, and lower costs for customer acquisition and retention. Information from CRM systems can increase sales revenue by identifying the most profitable customers and segments for focused marketing, cross-selling, and up-selling.

Customer relationship management systems help firms maximise the benefits of their customer assets. These systems capture and consolidate data from all over the organisation and then distribute the results to various systems and customer touch points across the enterprise. Customer relationship management systems can be classified as operational or as analytical. Operational CRM refers to customer-facing applications, such as sales force automation, call centre and customer service support, and marketing automation. Analytical CRM refers to customer relationship management applications dealing with the analysis of customer data to provide information for improving business performance. Benefits include increased customer satisfaction, reduced direct marketing costs, more effective marketing, and lower costs for customer acquisition and retention.

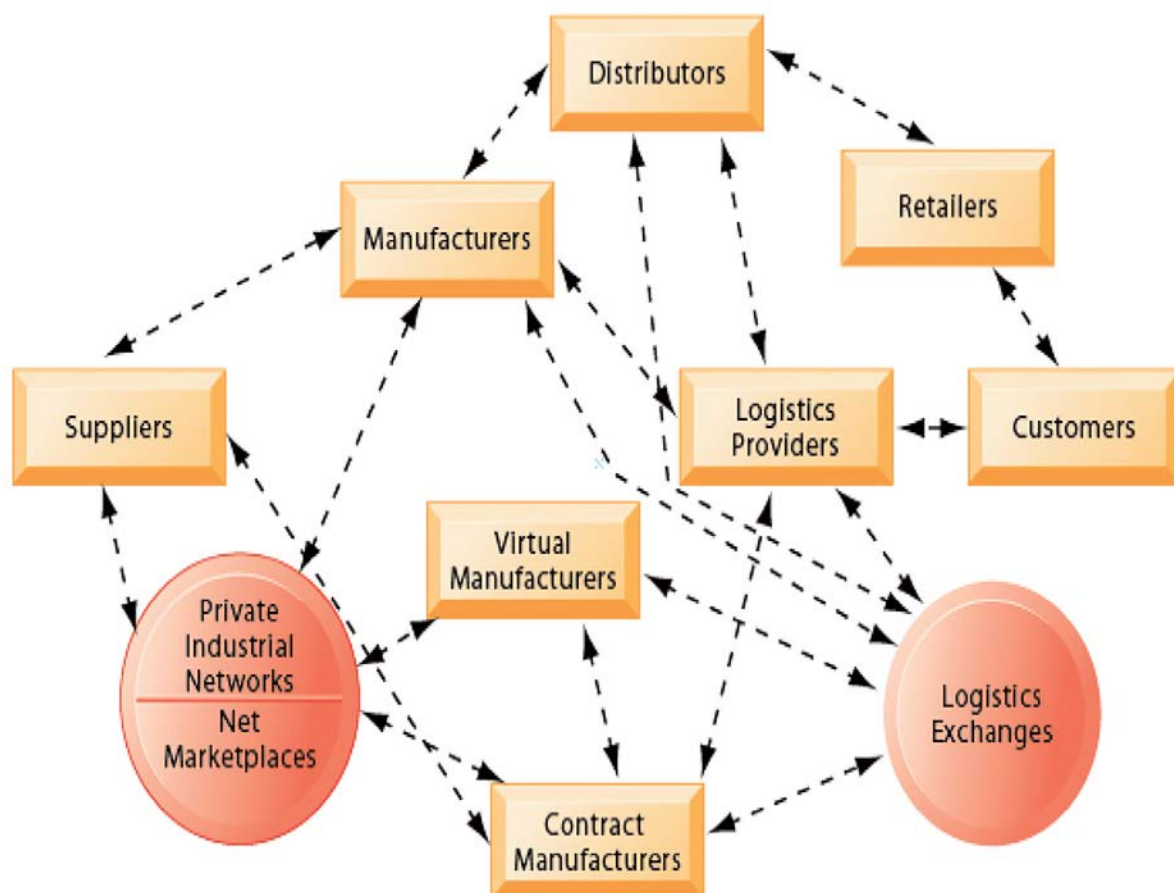
**(6 Marks)**

**(3 Marks – Definition, 3 Marks – Business Value)**

**b) How can the Internet and Internet technology facilitate supply chain management?**

Before the Internet, supply chain coordination was hampered by the difficulties of making information flow smoothly among disparate internal supply chain systems. Today, using intranets and extranets, all members of the supply chain can instantly communicate with each other, using up-to-date information to adjust purchasing, logistics, manufacturing, packaging, and schedules. The Internet provides a standard set of tools that are used by companies all over the world to coordinate global supply chains that include participants from many countries

Internet technology also makes it possible to move from sequential supply chains, where information and materials flow sequentially from company to company, to concurrent supply chains, where information flows in many directions simultaneously among members of a supply chain network. Ultimately, the Internet could create a "digital logistics nervous system" throughout the supply chain to permit simultaneous, multidirectional communication of information about participants' inventories, orders, and capacities.



The future Internet-driven supply chain operates like a digital logistics nervous system. It provides multidirectional communication among firms, networks of firms, and e-

marketplaces so that entire networks of supply chain partners can immediately adjust inventories, orders, and capacities.

The business value of supply chain management systems includes:

- Streamlined supply chain and accurate information
- Reduced supply chain costs
- Increased sales through accurate product availability

**(6 Marks)**

**(4 points x 1.5 Marks each)**

- c) What is an enterprise system and outline the challenges and benefits of using enterprise systems in an organization.

Enterprise systems focus on integrating the key internal business processes of the firm. Enterprise software is used by enterprise systems and is a set of integrated software modules for finance and accounting, human resources, manufacturing and production, and sales and marketing that allows data to be used by multiple functions and business processes.

Enterprise software consists of a set of interdependent software modules that support basic internal business processes. The software allows data to be used by multiple functions and business processes for precise organisational coordination and control. Organisations implementing this software would have to first select the functions of the system they wished to use and then map their business processes to the predefined business processes in the software. Some of the business processes supported by enterprise software include financial and accounting processes, human resources processes, manufacturing and production processes, and sales and marketing processes.

Benefits include creating an enterprise-enabled organisation, providing firm wide knowledge-based management processes, providing a unified information system technology platform and environment, and enabling more efficient operations and customer-driven business processes. Challenges include a daunting implementation process, surviving a cost-benefit analysis, inflexibility, and realising strategic value.

Companies can use enterprise systems to support organisational structures that were not previously possible or to create a more disciplined organisational culture. They can also improve management reporting and decision making. Furthermore, enterprise systems promise to provide firms with a single, unified, and all-encompassing information system technology platform and environment. Lastly, enterprise systems can help create the foundation for a customer-driven organisation.

Enterprise applications are very difficult to implement successfully. They require extensive organisational change, large new software investments, and careful assessment of how these systems will enhance organisational performance. Management vision and foresight are required to take a firm- and industry-wide view of problems and to find solutions that realise strategic value from the investment.

**(8 Marks)**

**(2 Marks – Definition + 6 Marks – Advantages & Disadvantages (3 of each))**

**END OF SOLUTIONS**

# INFORMATION SYSTEMS

## LEVEL 2

### **L2.2 EXAMINATION FORMAT QUESTIONS & SOLUTIONS**

#### **NOTES**

**Section A** - You are required to answer Questions 1 and 2.

**Section B** - You are required to answer any **three** out of Questions 3 to 6.

(If you provide answers to all of Questions 3 to 6, you must draw a clearly distinguishable line through the answer not to be marked. Otherwise, only the first answers to hand for these four questions will be marked.)

#### **TIME ALLOWED:**

3 hours, plus 10 minutes to read the paper.

#### **INSTRUCTIONS:**

During the reading time you may write notes on the examination paper but you may not commence writing in your answer book

Marks for each question are shown.

The pass mark required is 50% in total over the whole paper.

#### **Start your answer to each question on a new page.**

You are reminded that candidates are expected to pay particular attention to their communication skills and care must be taken regarding the format and literacy of the solutions. The marking system will take into account the content of the candidates' answers and the extent to which answers are supported with relevant legislation, case law or examples where appropriate.

List on the cover of each answer booklet, in the space provided the number of each question(s) attempted.

## SECTION A

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1. ELE Ltd is a company that provides landscaping services to both commercial entities and public authorities within the horticultural industry. The main services that it provides are Soft Landscaping (planning and maintenance of existing gardens and shrubs), Hard Landscaping (construction of patios, walls, decks, ponds, irrigation and other assorted features), and Design and Consultancy. 90% of the company's income arises from work carried out for companies and government agencies located mainly in the Butare region. The remaining 10% is generated from work carried out for the residential sector, mainly at the high end of the market.

The general upsurge in the economy has meant that the demand for landscaping services has grown significantly, with the result that the company's order book is now full and will be for the foreseeable future. This raises a number of problems for the company's management, in that because every project is unique, scheduling orders can be a very complex and difficult job. The complexity arises from the requirements of each project (ie type of machinery required, chemicals applied, time of the year, number of employees allocated and the general nature of the job). Tied in with the complexity is the need to manage expensive capital equipment used in the projects.

The company recognises that, if it cannot manage the increased workload, it will very quickly lose market share for its competitors. Furthermore, if they want to take on additional jobs in the short-term, the effective management and control of these issues will be vital.

After consultation with various stakeholders and the company's small IT Department, management have decided to have a computer based job scheduling system designed and built specifically for its requirements. The system will facilitate setting up, tracking, and managing projects. It will also record the costs associated with individual projects. The whole process is currently carried out manually by you, the company accountant, and members of your Finance Department. With your previous background in project management, you have approached to manage the development and implementation of the new system. Management regard this proposed system as being critical to the future success of the company.

### REQUIREMENT

- a) Explain to management the various approaches to determining the feasibility of this Project **(8 marks)**
- b) What do you think are the main considerations that will lead to successful development and implementation of this job scheduling system? How will you gauge the success of the completed system? **(12 marks)**

- c) Explain the benefits and possible drawbacks of outsourcing the development to an External organisation  
**(5 marks)**  
**(Total 25 marks)**

2.

- a) Name and describe the principal electronic payment systems used on the Internet.  
**(6 Marks)**
- b) Define the term 'Intranet' and outline the main benefits and possible drawbacks of using an Intranet in a medium sized organisation.  
**(9 Marks)**  
**(Total : 15 Marks)**

## SECTION B

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- 3.
- a) What steps would be taken in an effective re-engineering process? **(5 Marks)**
- b) What do you understand by the term Information System Prototyping? What are the benefits and limitations of this method of System Design? **(6 Marks)**
- c) In the context of Systems Design, write notes to illustrate your understanding of the following:
- Object oriented programming
  - Phased Conversion
  - RAD

**(9 Marks)**  
**(Total : 20 Marks)**

- 4.
- a) Why are so many IT projects managed so poorly? What do you think can be done about it? **(6 Marks)**
- b) What strategies can be used to overcome user resistance to systems development projects? **(6 Marks)**
- c) What are the limitations of financial models for establishing the value of Information Systems? **(8 Marks)**
- (Total : 20 Marks)**

- 5.
- a) Identify and briefly describe three major enterprise applications. **(8 Marks)**
- b) What are the challenges posed by enterprise applications? How can these challenges be addressed? **(7 Marks)**
- c) Identify two classifications for supply chain software. For each classification, briefly explain its capabilities. **(5 Marks)**
- (Total : 20 Marks)**



6.

- a) What is a Decision-Support System (DSS)? How does it differ from a Management Information System (MIS) **(8 Marks)**
- b) List and describe the stages in decision-making. **(4 Marks)**
- c) Define the term GDSS and explain how it can improve group decision-making. Identify four factors involved in the successful outcome of any group meeting? **(8 Marks)**

**(Total : 20 Marks)**

**END OF PAPER**

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## ***SUGGESTED SOLUTIONS***

### ***SOLUTION 1***

- a) Explain to the management the various approaches to determining the feasibility of this project. **(8 Marks)**

The first important decisions to be made in a systems development project are the examination of the feasibility of that project and also, which of different possible solutions is the preferred option. A feasibility study is necessary to determine whether a proposed computer aided manufacturing system is viable and also to look the feasibility of different alternative systems. This study involves examining different types of feasibility.

**Economic feasibility** relates to the cost-benefit justification of the different solutions using different methods. Such methods include break-even analysis, return on investment calculations or time value of money calculations. Each method involves calculating the total tangible costs and benefits of a new system. Typical costs include development, new hardware and training. Typical benefits include savings from improved efficiency, more accurate stock control and reduced staffing costs. Also required is the determination of intangible costs and benefits. Intangible costs and benefits are those that cannot be easily calculated but are still important indicators of a system's feasibility. An example of an intangible costs would be the disruption to ELE Ltd and improved technical image would be an intangible benefit.

**Technical feasibility** relates to the ability of ELE Ltd to build a particular system in terms of expertise and knowledge of the technology involved. It is important at this stage to assess the IT staff's experience and skills in the area of systems development and the platforms, software and hardware, being used.

**Organisational feasibility** involves studying how the new system will support the current and future business plans and goals.

**Operational feasibility** involves studying the ability of the organisation to accept and use the new system. Issues to examine under this heading include company culture and workforce skill.

Once a study has been conducted into project feasibility, it should be documented in the form of a feasibility report, to be given to the Managing Director, containing the following:

- Project background, context and system objectives
- Description of current system and problems
- Outline of possible solutions and an evaluation of the different types of feasibility in relation to each under the headings mentioned above.
- A recommendation for a particular solution or sometimes to discard the project.

**(8 Marks)**

**(Any 4 points similar to above x 2 marks each)**

b) What do you think are main issues that will lead to the successful development and implementation of this job scheduling system? How will you gauge the success of the completed system?

- The role of users in the implementation process
- The degree of management support for the implementation efforts
- The level of complexity and risk of the implementation project
- The quality of management of the implementation process

Issues that might contribute to project failure are:

- The techniques for estimating the length of time required to analyse and design systems are poorly developed.
- It is assumed that all will go well when in fact it rarely does. (Murphy is alive and well and resident in your organisation!)
- Not enough credence is given to the fact that building systems often involves tasks that are sequentially linked, cannot be performed in isolation, and require extensive communications and training.
- Adding more workers, especially untrained ones, does not necessarily enhance the operation.
- Problems are not reported in a timely fashion. No one wants to be the bearer of bad tidings.

**(4 main issues x 1.5 marks)**

**(6 Marks)**

How will you gauge the success of the completed system?

Student answers will vary but should include an understanding of the main project variables: Scope, time, cost, quality, and risk. A sample answer is:

The factors that could be used to gauge the success of the system:

- **Cost:** What was the original budget and final budget
- **Time:** What was the original schedule and final schedule
- **Quality:** Did the project meet the requirements outlined in the project plan
- **Scope:** Did the scope of the project change?

Questions that could be asked to understand the success or failure of the project would be:

- What technical difficulties were experienced and which could have been foreseen?
- What risks did the project entail?
- What events led to the scope changing?
- What difficulties occurred that were a consequence of personal, employee-oriented problems?
- What difficulties occurred that were a consequence of environmental, organisational, or managerial challenges?
- What do project team members consider as the primary challenges?
- What do clients or stakeholders consider as the primary challenges?

**(4 tests x 1.5 marks)**

**(6 Marks)**

- c) Explain the benefits and possible drawbacks of outsourcing the development to an external organisation.

Outsourcing is the process of turning over an organisation's computer center operations, telecommunications networks, or applications development to external vendors who provide these services. Outsourcing is an option often considered when the cost of information systems technology has risen too high. Outsourcing is seen as a way to control costs or to develop applications when the firm lacks its own technology resources to do this on its own. It is seldom used for a system that is strategically important.

**(5 Marks)**

**(2 benefits, 2 drawbacks X 1 mark each, 1 mark for relating to this case)**

## ***SOLUTION 2***

- a) Name and describe the principal electronic payment systems used on the Internet. Table 4-3, Laudon & Laudon summarises the electronic payment systems. The electronic payment systems discussed in the chapter include:-

- Digital credit card payment
- Digital wallet
- Accumulated balance payment
- Stored value payment systems
- Digital cash
- Peer-to-peer payment systems
- Digital checking
- Electronic billing presentment and payment.

Digital credit card payment systems provide secure services for credit card payments on the Internet and protect information transmitted among users, merchant sites, and processing banks. Digital wallets store credit card and owner identification information and provide these data automatically during electronic commerce purchase transactions. Accumulated balance payment systems accumulate micropayment purchases as a debit balance that must be paid periodically on credit card or telephone bills. Stored value payment systems enable customers to make instant online payments from a value stored in a digital account. A smart card is a credit card-size plastic card that stores digital information and can be used for electronic payments. Digital cash is an electronic form of currency, moves outside the normal network of money, and is used for micropayments or larger purchases. A peer-to-peer payment system is an electronic payment system for people who want to send money to vendors or individuals who are not set up to accept credit card payments. A digital check is an electronic check with a secure digital signature. An electronic billing presentment and payment system is used to pay routine monthly bills; it allows users to view their bills electronically and pay them through electronic funds transfers from bank or credit card accounts

**(6 Marks)**

**(Any 4 Methods + examples & distinguish between)**

- b) Define the term 'Intranet'. Outline the main benefits and possible drawbacks of using an Intranet in a medium sized organisation.

Explanation of the term 'Intranet'. Outline the main benefits and possible drawbacks of using an Intranet in a medium sized organisation.

- Internal network that uses Internet technology
- Typically has connections to the Internet through Gateway Computers (protected by firewalls)
- Intranets are used for 'Internet style' transfer of information, but within a particular organisation or 'community'

**Benefits/Uses:**

- It is the least expensive way to set up a multimedia hypertext system
- User training is minimal, because web browsers provide a standard, simple and intuitive user interface
- It can use existing hardware and system software
- It can integrate information from different sources into a common view.
- Publish information to staff (policy manuals, newsletters, etc.)
- Individual department/employee Web pages
- Gathering data - time reports, schedules, customer visits
- Allows remote access to business
- Interactive apps - polling for opinions
- Training (e-Learning)
- Integration with corporate data (prices, product info and sales stats accounting, asset tracking, etc.)
- Video conferencing? VoIP?
- Inexpensive (relatively)
- Easier to keep users up to date
- Effective use of distributed computer resources
- Training easy (for 'net' users)
- Add-on applications (including multimedia) available
- Intranet Open standards
- Platform independence and portability
- Consistent and reliable platforms
- Support for multiple data sources and types
- Process distribution and scalability
- Ease of use (consistent and friendly user interfaces)
- The universal client provides a common interface to all services
- Shorter development times and reduced costs
- Collaboration
- Development tools that are integrated through the use of open standards
- Reduces certain business costs
- Removes 9 to 5 access to information
- Communications infrastructure

### **Disadvantages of Intranets**

- Security concerns (easy to hack)
- Bandwidth
- Measuring ROI (Return On Investment)
- Constant change
- Information needs to be continuously updated
- Technical support needed to maintain system

Intranet benefits include connectivity from most computing platforms, can be tied to internal corporate systems and core transaction databases, can create interactive applications with text, audio, and video, scalable to larger or smaller computing platforms as requirements change, easy-to-use, universal Web interface, low start-up costs, richer, more responsive information environment, and reduced information distribution costs.

Organisations are using intranets to create enterprise collaboration environments. Regardless of location, intranets allow organisational members to exchange ideas, share information, and work together on common projects and assignments.

In sales and marketing, intranets help oversee and coordinate the activities of the sales force. The sales force can obtain updates on pricing, promotions, rebates, customers, or information about competitors. The sales force can also access presentation and sales documents, which they can customise for specific customers. In the human resources area, intranets keep employees informed of company issues and policies, allow employees to access and update their personnel records, and take online competency tests. Further, job postings and internal job information can be made available to employees. Employees can enrol in health care, benefit plans, or company training seminars. In finance and accounting, intranets provide an online, integrated view of financial and accounting information in an easy-to-use format. In the manufacturing area, intranets integrate complex information across the plant floors or many plants, particularly in managing work flow and process control.

**(9 Marks)**

**(3 Marks – Definition, 3 Marks – Benefits, 3 Marks – Drawbacks)**



## ***SOLUTION 3***

- a) What steps would be taken in an effective reengineering process?

To reengineer effectively, senior management must develop a broad strategic vision that calls for redesigned business processes. Companies should next identify a few core business processes to be redesigned, focusing on those with the greatest potential payback in strategic value. Next, management must understand and measure the performance of the existing processes as a baseline. Using information technology creates new design options for various processes because it can be used to challenge long-standing assumptions about work arrangements that use to inhibit organisations. The organisation's IT infrastructure should have capabilities to support business process changes that span boundaries between functions, business units, or firms. It must also be remembered that a new information system always affects jobs, skill requirements, workflows, and reporting relationships. Fear of these changes will breed resistance, confusion, and even conscious efforts to undermine the changes. Thus, in reengineering, people as well as processes must be considered.

**(5 Marks)**  
**(5 steps)**

- b) What do we mean by information system prototyping? What are the benefits and limitations of this method of system design?

Information system prototyping is an explicitly interactive system design methodology that builds an experimental model of a system as a means of determining information requirements. Prototyping builds an experimental system quickly and inexpensively for demonstration and evaluation so that users can better determine information requirements. A preliminary model of a system or important parts of the system is built rapidly for users to experiment with. The prototype is modified and refined until it conforms precisely to what users want. Information requirements and design are determined dynamically as users interact with and evaluate the prototype.

Prototyping is most valuable when requirements are uncertain and cannot be entirely pre-specified or when the appropriate design solution is unclear. Prototyping is especially helpful for designing end-user interfaces (screens and reports) and for determining elusive requirements of decision-support type applications. Prototyping can help reduce implementation costs by capturing requirements more accurately at an earlier point in the implementation process. It is not so useful for a very structured, well-understood, or routine problem.

It is best suited for smaller applications oriented toward simple data manipulation. Large systems with complex processing may only be able to have limited features prototyped. The prototype may be built so rapidly that design is not well thought out or must be reworked for a production environment. The problem arises when the prototype is adopted as the production version of the system without careful analysis and validation. Prototypes are built so rapidly that documentation and testing are glossed over. The system is so easily changed that documentation may not be kept up-to-date.

The steps in prototyping include identifying the user's basic requirements:

- Developing a working prototype of the system outlined in the basic requirements
- Using the prototype
- Revising and enhancing the prototype based on the user's reaction.

The third and fourth steps are repeated until users are satisfied with the prototype.

**(3 Marks) – Definition & steps**  
**(3 Marks) – Advs & Disadv (3 of each)**

### c) Object Oriented Programming

The approach called object-oriented programming (OOP) is relatively new and distinctly different. An important emerging trend, this development deserves its own section. It is possible here only to introduce the concepts and terminology of object technology. There is no expectation that you will understand exactly how object-oriented programming works; even professional programmers can take months to gain that knowledge.

Consider items that, in everyday parlance, might be called objects--for instance, a tire or a cat. Now affix known facts to those everyday objects. Without trying to be exhaustive, it can be said that a tire may be round and black and that a cat has four feet and fur. Taking this further, each object also has functions: A tire can roll or stop or go flat, and a cat can eat or purr or howl. In the world of object orientation, an object includes the item itself and also related facts and functions. More formally, in a programming environment, an object is a self-contained unit that contains both data and related facts and functions--the instructions to act on that data. This is in direct contrast to traditional programming, in which procedures are defined in the program separate from the data.

Key points:

- Objects with data and inheritance
- Ability to inherit properties
- Reusable libraries of code
- GUI applications, Client/server systems, and Multimedia applications.

**(3 Marks)**

### **Phased Conversion**

The process of splitting system or project into component parts and phasing each part in gradually over time. The system is divided by function, organisational unit etc. This process assumes the project can be incrementally introduced and is regarded as a safe option during the introduction stage.

**(3 Marks)**

### **RAD**

RAD is a programming system that enables programmers to quickly build working programs. In general, RAD systems provide a number of tools to help build graphical user interfaces that would normally take a large development effort. Two of the most popular RAD systems for Windows are Visual Basic and Delphi.

Historically, RAD systems have tended to emphasise reducing development time, sometimes at the expense of generating efficient executable code. Nowadays, though, many RAD systems produce extremely fast code. Conversely, many traditional programming environments now come with a number of visual tools to aid development. Therefore, the line between RAD systems and other development environments has become blurred

**(3 Marks)**

## ***SOLUTION 4***

a) Why are so many projects managed so poorly? What do you think can be done about it?

- The techniques for estimating the length of time required to analyse and design systems are poorly developed.
- It is assumed that all will go well when in fact it rarely does. (Murphy is alive and well and resident in your organisation!)
- Not enough credence is given to the fact that building systems often involves tasks that are sequentially linked, cannot be performed in isolation, and require extensive communications and training.
- Adding more workers, especially untrained ones, does not necessarily enhance the operation.
- Problems are not reported in a timely fashion. No one wants to be the bearer of bad tidings.

**(4 Marks)**

**(4 points)**

b) What strategies can be used to overcome user resistance to systems development projects?

**(2 Marks)**

**(2 points)**

End-user resistance to IS projects can be overcome by the following strategies:

- User participation to elicit commitment as well as to improve design
- User education and training
- Management edicts and policies, including appropriate management sponsorship
- Incentives for those who cooperate
- Improved user interfaces
- Solving organisational problems prior to implementation

**(1.5 Marks x 4 points)**

**(6 Marks)**

- c) What are the limitations of financial models for establishing the value of information systems?

Financial models do not express the risks and uncertainty of their own costs and benefits estimates. Technology – especially information technology – can change during the course of the project, causing estimates of costs and benefits to deviate from the plan. Intangible benefits are difficult to quantify. These factors play havoc with financial models. Traditional approaches to valuing information systems investments tend to assess the profitability of individual systems projects for specific business functions. These approaches do not adequately address investments in ITT infrastructure, testing new business models or other enterprise-wide capabilities that could benefit the organisation as a whole. The traditional focus on the financial and technical aspects of information system tends to overlook the social and organisational dimensions of information systems that may affect the true costs and benefits of the investment.

There is some reason to believe that investment in information technology requires special consideration in financial modeling. Capital budgeting historically concerns itself with manufacturing equipment and other long- term investments, such as electrical generating facilities and telephone networks. These investments have expected lives of more than one year and up to 25 years. Information systems differ in that their life expectancy is much shorter. The very high rate of technological change means that most systems are seriously out of date in five to eight years. This high rate of technological obsolescence means that the payback period must be shorter and the rates of return higher than typical capital projects with longer useful lives.

**(2 Marks x 4 points)**

## ***SOLUTION 5***

- a) Identify and briefly describe three major enterprise applications.

Enterprise systems, customer relationship management, and supply chain management are three enterprise applications. Enterprise systems are based on a suite of integrated software modules and a common central database. Enterprise systems utilise enterprise software to support financial and accounting, human resources, manufacturing and production, and sales and marketing processes. Enterprise systems provide many benefits including an enterprise-enabled organisation, improved management reporting and decision making, a unified information systems technology platform, and more efficient operations and customer-driven business processes.

Supply chain management systems help an organisation better manage its supply chain, including planning, sourcing, making, delivering, and returning items. Supply chain management software can be categorised as a supply chain planning system or as a supply chain execution system. A supply chain planning system enables a firm to generate demand forecasts for a product and to develop sourcing and manufacturing plans for that product.

A supply chain execution system manages the flow of products through distribution centers and warehouses to ensure that products are delivered to the right locations in the most efficient manner. Supply chain management benefits include improved customer service and responsiveness, cost reduction, and cash utilisation.

Customer relationship management systems help firms maximise the benefits of their customer assets. These systems capture and consolidate data from all over the organisation and then distribute the results to various systems and customer touch points across the enterprise. Customer relationship management systems can be classified as operational or as analytical. Operational CRM refers to customer-facing applications, such as sales force automation, call center and customer service support, and marketing automation. Analytical CRM refers to customer relationship management applications dealing with the analysis of customer data to provide information for improving business performance. Benefits include increased customer satisfaction, reduced direct marketing costs, more effective marketing, and lower costs for customer acquisition and retention.

**(2 Marks)** – Definition

**(6 Marks)** – 2 Marks for each application

- b) What are the challenges posed by enterprise applications? How can these challenges be addressed?

Enterprise applications are very difficult to implement successfully. They require extensive organisational change, large new software investments, and careful assessment of how these systems will enhance organisational performance. Management vision and foresight are required to take a firm- and industry-wide view of problems and to find solutions that realise strategic value from the investment.

Benefits include creating an enterprise-enabled organisation, providing firm-wide knowledge-based management processes, providing a unified information system technology platform and environment, and enabling more efficient operations and customer-driven business processes. Challenges include a daunting implementation process, surviving a cost-benefit analysis, inflexibility, and realising strategic value.

**(4 Marks)** – Challenges (4 Points)

**(3 Marks)** – Overcome challenges

- c) Identify two classifications for supply chain software. For each classification, briefly explain its capabilities.

Supply chain planning systems enable the firm to generate demand forecasts for a product and to develop sourcing and manufacturing plans for that product. They help companies make better operating decisions such as determining how much of a specific product to manufacture in a given time period; establishing inventory levels for raw materials, intermediate products, and finished goods; determining where to store finished goods; and identifying the transportation mode to use for product delivery. One of the most important functions is demand planning, which determines how much product a business needs to make to satisfy all of its customers' demands. These functions are referred to as order planning, advanced scheduling, demand planning, distribution planning, and transportation planning.

Supply chain execution systems manage the flow of products through distribution centres and warehouses to ensure that products are delivered to the right locations in the most efficient manner. They track the physical status of goods, the management of materials, warehouse and transportation operations, and financial information involving all parties. These functions are referred to as order commitments, final production, replenishment, distribution management, and reverse distribution.

**(5 Marks)**

**(2.5 Marks each classification)**

## ***SOLUTION 6***

- a) What is a decision-support system (DSS)? How does it differ from a management information system (MIS)?

A management information system is especially helpful for handling routine management tasks. For non-routine decision-making, many managers use another type of system called a decision support system (DSS). As the name implies, a DSS is a computer system that supports managers in decision-making tasks. In the broadest sense a utilised spreadsheet program, could be designed for DSS purposes. After all, managers everywhere use spreadsheets to find answers to "What if?" questions and make decisions based on these sample scenarios. However, most managers reserve the term decision support system for a more specialised kind of software designed to create mathematical models of business systems. DSS can be described as a set of well-integrated, user-friendly computer based tools. From a management point of view there are four major functions of DSS, which include; What if Analysis, Model building, goal seeking and graphical analysis.

**(4 Marks -Definition)**

Generally speaking, MIS provide routine, pre-specified, and formatted reports based on data extracted and summarised from the firm's TPS. These reports provide information on the firm's performance and are used to help monitor and control the business.

In contrast, DSS provide capabilities for addressing non-routine decisions and user control. DSS emphasise change, flexibility, and rapid response and place a greater emphasis on models, assumptions, ad hoc queries, and display graphics. Additionally, MIS primarily address structured problems, while DSS focus more on supporting semi structured and unstructured problems.

**(4 Marks - Difference)**

- b) List and describe the stages in decision-making.

Stages in the decision-making process include:

- Intelligence consists of discovering, identifying, and understanding the problems occurring in the organisation – why is there a problem, where, and what effects it is having on the firm.
- Design involves identifying and exploring various solutions to the problem.
- Choice consists of choosing among solution alternatives.
- Implementation involves making the chosen alternative work and continuing to monitor how well the solution is working.

**(4 Marks)**



- c) Define the term GDSS and explain how it can improve group decision making.  
Identify four factors involved in the successful outcome of any group meeting?

Beyond three to five attendees the traditional meeting process breaks down. GDSS software tools contribute to a more collaborative atmosphere by guaranteeing contributors' anonymity so that attendees can focus on evaluating the ideas themselves. The GDSS software tools follow structured methods for organising and evaluating ideas and for preserving the results of meetings, allowing non-attendees to locate needed information after the meeting. The documentation of the meeting by one group at one site can also be used as input to another meeting on the same project at another site. If properly designed and supported, GDSS meetings can increase the number of ideas generated and the quality of decisions while producing the desired results in fewer meetings.

The nature of electronic meeting technology is only one of a number of factors that affect meeting processes and output. The outcome of group meetings depends upon the composition of the group, the manner in which the problem is presented to the group, the facilitator's effectiveness, the organisation's culture and environment, the quality of the planning, the cooperation of the attendees, and the appropriateness of tools selected for different types of meetings and decision problems.

**(5 Marks) -(GDSS)**

**(3 Marks) - (Factors)**

**END OF SOLUTIONS**