

May 2008 : Management Information and Control System

1. (a) Discuss various factors that render manual audit method ineffective in Information System Audit. **(5 Marks)**
(b) Briefly explain the components of an analysis and design work bench. **(5 Marks)**
(c) Briefly discuss any five database control features. **(5 Marks)**
(d) Discuss briefly the powers of Central Government U/s.87 to make rules in respect of Information Technology Act, 2000 **(5 Marks)**
2. (a) What is work-in-process control system? Describe briefly the system interfaces, files and inputs, and reports involved in this system. **(10 Marks)**
(b) Describe the main pre-requisites of MIS which makes it an effective tool. Explain the major constraints in operating it. **(10 Marks)**
3. (a) Discuss in detail, how the investigation of present system is conducted by the system analyst. **(10 Marks)**
(b) Briefly explain various kinds of controls that can be incorporated in the system to make frauds difficult to perpetrate. **(10 Marks)**
4. (a) Briefly explain the characteristics and features of an Enterprise Resources Planning. **(5 Marks)**
(b) Briefly discuss four basic components of Decision Support System. **(5 Marks)**
(c) Define the following computer fraud and abuse technique: **(2×5=10 Marks)**
 - (i) War dialing
 - (ii) Scavenging
 - (iii) Cracking
 - (iv) Internnet terrorism
 - (v) Masquerading.
5. (a) Discuss various issues that should be considered while designing system input **(5 Marks)**
(b) Briefly explain the risks associated with client / server model. **(5 Marks)**
(c) "Personnel information system deals with flow of information relating to people"-Explain **(5 Marks)**
(d) Briefly describe various steps involved in system testing. **(5 Marks)**
6. (a) Briefly explain the best approach to implement information security policy? **(5 Marks)**
(b) What is the purpose of the system evaluation? How is it performed? **(5 Marks)**
(c) Discuss, how a controlled source program library environment can help to deter unauthorized changes to program. **(5 Marks)**
(d) Briefly explain the role of Information Security Administrator. **(5 Marks)**
7. Write short notes on the following: **(4×5 = 20 Marks)**
 - (a) Closed and open systems
 - (b) Programmed decisions
 - (c) Program documentation
 - (d) Firewalls.

PAPER 6: MANAGEMENT INFORMATION AND CONTROL SYSTEM

Question No.1 is compulsory.

Answer any four questions from remaining six questions

Question 1:

(5 Marks each)

- (a) While performing an IS audit, the auditors should ascertain that various objectives are properly met. Briefly describe them.
- (b) What are the duties of certifying authorities in respect of digital signature?
- (c) Discuss any five benefits which are attained by implementing a computerized model for making decision.
- (d) Briefly explain the various fact finding techniques which are used by the system analyst for determining the needs of an organization.

Question 2:

- (a) What is "Information Security"? Why is it important in any organization? Explain briefly. **(10 Marks)**
- (b) System analysts develop various categories of information system to meet a variety of business needs. Discuss any three such systems briefly. **(10 Marks)**

Question 3:

- (a) Explain with the help of a diagram the various tools which are included in a testing workbench. **(10 Marks)**
- (b) What do you understand by Material inventory Control system? Draw the information flow diagram for designing computerized material inventory control system. **(10 Marks)**

Question 4:

- (a) Explain briefly various activities that should be completed for successful conversion of an existing system to the new information system. **(10 Marks)**
- (b) Discuss the various activities which are part of the system development cycle. **(5 Marks)**
- (c) State the standards that should be followed while designing graphical output. **(5 Marks)**

Question 5:

- (a) Briefly discuss any five program design tools. **(10 Marks)**
- (b) State and explain the four back up and recovery features necessary in a DBMS. **(5 Marks)**
- (c) Briefly explain five categories of Computer frauds based on the data processing model. **(5 Marks)**

Question 6:

- (a) What is Enterprise Resource Planning? Briefly describe its benefits. **(10 Marks)**
- (b) State the steps involved in selection of a Computer system. **(5 Marks)**
- (c) Briefly explain the principles to guide the design of measures and indicators to be Included in EIS. **(5 Marks)**

Question 7: Write short notes on the following:

(4 ×5=20 Marks)

- (a) Objectives of Information Technology Act, 2000.
- (b) Review areas of an IS Auditor.
- (c) Process Integration.
- (d) End user development approach in system development.

Question 1 (5 Marks each)

- (a) Briefly describe the techniques used to preserve audit trails in a computer based information system.
- (b) Briefly outline the contents of Information Security Policy.
- (c) What are CASE tools? Discuss briefly its three categories.
- (d) Various software packages serve as aids in analysis of program logic. Explain briefly.

Question 2 (10 Marks each)

- (a) State and briefly explain the various stages of developing an in-house program
- (b) How will you establish and implement Critical Success Factors (CSFs) and Key Performance Indicators (KPIs) in an organization for achieving the benefits of implementation of ERP?

Question 3 (10 Marks each)

- (a) What is Share Accounting System? Describe briefly the input, outputs and processing steps involved in this system.
- (b) "Decision support systems are widely used as part of an Organisation's Accounting Information System". Give examples to support this statement.

Question 4

- (a) What is system manual? What information is included in it? (10 Marks)**
- (b) What are five control objectives of an Operating System? (10 Marks)**
- (c) What Steps can be taken to detect computer fraud? (5 Marks)**

Question 5

- (a) What is prototyping approaches to systems development? Describe its advantages and disadvantages also **(10 Marks)**
- (b) Describe some of the powers of controller u/s89 to make regulations consistent with Information Technology Act, 2000. **(5 Marks)**
- (c) What is Transaction processing cycle? Discuss briefly four common cycles of a business activity. **(5 Marks)**

Question 6

- (a) Describe various steps that should be taken for successful installation of the equipment during the implementation phase. 1 **(10 Marks)**
- (b) What are control techniques that are essential for the security of the client/server environment? **(5 Marks)**
- (c) Differentiate between open and closed systems. **(5 Marks)**

Question 7

(20 Marks)

- (a) Data dictionary
- (b) System Maintenance
- (c) Holistic Protection
- (d) Snapshot Technique

PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEMS.
NOVEMBER 2006

Question No.1 is Compulsory.

Answer any four questions from remaining six questions.

Question 1

- (a) Why Computerised information Systems are more vulnerable to many more kinds of threats than manual systems? Name some of the key area where large amounts of data stored in electronic form are most vulnerable. **(5 Marks)**
- (b) Discuss some common types of field interrogation as validation control procedure in an EDP set up. **(5 Marks)**
- (c) Differentiate between General and Application controls. Also the broad categories into which the first can be subdivided. **(5 Marks)**
- (d) How does MIS auditing enhance the control process.

Question 2

- (a) State the fact to be considered for designing an effective Management Information system. **(10 Marks)**
- (b) Enumerate various information which are required for sales support and sales analysis. **(10 Marks)**

Question 3

- (a) What are the project management items required with an I.T. project system failures? Give the elements to be included in the adopted framework to avoid such failures. **(10 Marks)**
- (b) Discuss some of the commonly used coding schemes. **(5 Marks)**
- (c) Describe benchmarking problem on vendors proposals. **(5 Marks)**

Question 4

- (a) Describe the sequence of events which occur immediately for each transaction when Controlled by the sales order entry computer programs in an OLRT systems. **(10 Marks)**
- (b) Why is personnel training important? What type of training should be imparted to users? **(5 Marks)**
- (c) How can a computer fraud be committed using input in four different ways? **(5 Marks)**

Question 5

- (a) Describe some of powers of the Cyber appellate tribunal. **(5 Marks)**
- (b) What are the five subsequent levels of integration case tools? **(5 Marks)**
- (c) What are the subsequent threats? How do the intruders manipulate the messages being Transmitted? **(10 Marks)**

Question 6

(a) Scenario 1:

Nobody told you that internet use in office was being monitored. Now you have been warned you will be fired if you use the internet for recreational surfing again. What are your rights? **(7 Marks)**

(b) Scenario 2:

Your employees are abusing their internet privileges, but you don't have an Internet usage policy. What do you do? **(8 Marks)**

(c) Scenario 3:

Employee Mr. X downloads adult material to his PC at work, and employee Miss Y sees it. Miss Y then proceeds to sue the company for sexual harassment. As the employer are you liable?

(8 Marks)

Question 7

(4 × 5 = 20)

- (a) Enterprise Controlling
- (b) Integrated Test facility
- (c) Restorative Information Protection
- (d) Internet Frauds

PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEMS.
May 2006

Question No.1 is Compulsory.

Answer any four questions from remaining six questions.

Question 1

- (a) A XYZ Company receives orders from customers either by telephone, facsimile or electronic data interchange. A clerk then transcribes the order into one of the company's order form to be keyed into the order entry system.

You being the information system auditor of the company, suggest various internal control procedures to be adopted to prevent inaccurate or unauthorized source data entry. **(5 Marks)**

- (b) Describe the composition and powers of Cyber regulatory appellate tribunal. **(5 Marks)**
(c) Discuss the limitations of the Management Information System. **(5 Marks)**
(d) Define the following Computer fraud abuse techniques:
(i) Hacking
(ii) Logic time bomb
(iii) Piggy backing
(iv) Spamming
(v) Data diddling.

Question 2

- (a) What you mean by Information? Describe the important characteristics of information, which makes it useful to the organization. **(10 Marks)**
(b) "Information is necessary to executive for performing the function of planning". Substantiate the above statement with regard to information requirements of a marketing system. **(5 Marks)**
(c) Describe various decisions which can be made with the help of financial Information System. **(5 Marks)**

Question 3

- (a) A Company is offering a wide range of products and services to its customers. It relies heavily on its existing information system to provide up to date information. The Company wishes to enhance its existing system. You being an information system auditor, suggest how the investigation of the present information system should be conducted so that it can be further improved upon. **(10 Marks)**
(b) Describe various software tools used in Decision Support System. **(5 Marks)**
(c) Describe various components of Client server architecture. **(5 Marks)**

Question 4

- (a) What do you mean by production scheduling? Draw the information flow diagram for design of computerized production scheduling system. Also explain : **(10 Marks)**
(i) System interface
(ii) File inputs and
(iii) Reports required for the above system.
(b) Briefly discuss about various factors which should be considered for evaluating the vendor proposal for supply of computer system. **(5 Marks)**
(c) Describe various strategies for change over from manual system to computerized system. **(5 Marks)**

Question 5

- (a) What is significance of input validation control? Describe briefly three different levels of input validation controls used in computerized information system. **(10 Marks)**
- (b) Explain the various criteria used for valuation of ERP Packages. **(5 Marks)**
- (c) Describe briefly five components of a CASE work bench. **(5 Marks)**

Question 6

- (a) What do you mean by information security policy? Explain the salient features of the Information Security Policy. **(10 Marks)**
- (b) Describe the various security components available in a secure operating system. **(5 Marks)**
- (c) Suggest suitable guidelines to be followed for efficient form design. **(5 Marks)**

Question 7**(5×4=20 Marks)**

- (a) Write short notes on any of the following:
 - (i) Firewalls
 - (ii) Top down approach of system development.
 - (iii) Material requirement planning.
 - (iv) Source program library control.
 - (v) Sources of packaged software.

**PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
NOVEMBER 2005**

Question No 1 is compulsory.

Answer any four questions from the remaining six questions.

Question 1

- (a) Discuss various factors that render manual audit method ineffective in IS audit. **(5 Marks)**
- (b) Briefly describe the various objectives to be met while performing an IS audit. **(5 Marks)**
- (c) "No Company, big or small, can ignore the opportunity opened by the Internet." What are the various methods by which Internet can be accessed? What are the considerations for choosing the right alternative. **(5 Marks)**
- (d) Mention any five security management steps an Internet user should take to protect from Cyber crime and computer security threats. **(5 Marks)**

Question 2

- (a) How system approach can be used for solving problems? **(10 Marks)**
- (b) Define the term system stress and system change. **(5 Marks)**
- (c) What are the fact finding techniques by a system analyst? **(5 Marks)**

Question 3

- (a) What is an Executive Information system? Discuss its various purposes. **(10 Marks)**
- (b) Discuss various issues that should be considered while designing systems input. **(10 Marks)**

Question 4

- (a) Discuss various stages through which an in-house creation of program has to pass. **(10 Marks)**
- (b) What are the benefits achieved by implementing the ERP packages? **(10 Marks)**

Question 5

- (a) What kind of controls can be incorporated in the system to make frauds difficult to perpetrate? **(10 Marks)**
- (b) Discuss various ways in which audit trail can be used to support security objectives. **(5 Marks)**
- (c) Explain the importance of source documents and associated control techniques. **(5 Marks)**

Question 6

- (a) What are the various Tangible and Intangible benefits that can result from the development of a computerized system? **(10 Marks)**
- (b) What are the advantages of using pre-written application packages? **(5 Marks)**
- (c) What are the duties of certifying authorities with respect to digital signature? **(5 Marks)**

Question 7

Write short notes on the following:

(4×5=20)

- (a) Service-centric model
- (b) Analysis and design work bench
- (c) Business Engineering
- (d) System maintenance.

PAPER 6: MANAGEMENT INFORMATION AND CONTROL SYSTEMS

May 2005

Question No 1 is compulsory.

Answer any four questions from the remaining six questions.

Question 1

- (a) Your client has recently switched over from manual accounting to computerized accounting. When you receive the computerized accounts for the first quarter you find the following error:
- (i) Incomplete or unauthorized data input
 - (ii) Errors in the files or database during updating
 - (iii) Improper distribution or disclosure of output.
- You, as an information system auditor suggest the suitable test of controls for audit of Computer processing so that the above mentioned errors can be prevented. **(10 Marks)**
- (b) State the objectives and scope of IT act 2000. **(5 Marks)**
- (c) Why is computer fraud a serious threat to any business organization. **(5 Marks)**

Question 2

- (a) What is Information security? State the core principles of information security. **(10 Marks)**
- (b) "A decision support system supports the human decision making process rather than providing a means to replace it". Justify the above statement by stating the characteristics decision support system. **(5 Marks)**
- (c) Describe the main pre-requisite of a Management Information System which makes it an effective tool. **(5 Marks)**

Question 3

- (a) What are the factors considered to design the ideal layout of printed output? **(10 Marks)**
- (b) What is the Vendor evaluation? Define the process for the same. **(10 Marks)**

Question 4

- (a) A Company is planning to introduce a new range of products. The top management is advised to get developed on marketing information system which can enhance the decisional capacities in various marketing activities. You being in-charge of this project suggest what information sale system are required to be developed. **(10 Marks)**
- (b) Describe any five functional areas of a system which needs to be analyzed by system analyst for detailed investigation of the present system. **(5 Marks)**
- (c) Describe various access control methods used for safety of the database. **(5 Marks)**

Question 5

- (a) What do you understand by disaster recovery plan? Discuss its various components. **(10 Marks)**
- (b) Explain different activities involved in conversion from manual system to computerized System. **(5 Marks)**
- (c) Describe the characteristics of good coding system. **(5 Marks)**

Question 6

- (a) What are the characteristics and features of ERP? **(5 Marks)**
- (b) List any 5 ERP vendors and briefly describe the ERP packages offered by them. **(5 Marks)**
- (c) What are called work benches? Describe the various tools used in programming work Bench. **(10 Marks)**
- (4×5=20 Marks)**

Question 7

- (a) Transaction logs
- (b) Data dictionary
- (c) Client- Server model
- (d) Disc Imaging and Analysis Technique.

PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
November 2004

Question No.1 is compulsory.

Answer any four questions from the remaining six questions.

Question 1

- (a) "In On-line systems, conventional audit trail is difficult and almost impossible." Why? Explain the kind of audit techniques used in such system. **(10 Marks)**
- (b) Define the following important terms in the light of the Section 2 of the I.T. Act, 2000.
- i. Affixing digital signature
 - ii. Asymmetric crypto system
 - iii. Computer network
 - iv. Private and Public keys
 - v. Secure system.
- (10 Marks)**

Question 2

- (a) What are the production information requirements of a GM (Production and Operations Management) with regard to production planning and control? **(10 Marks)**
- (b) What are the variables that the top management should consider during negotiations with the labour unions? **(5 Marks)**
- (c) Successful executives take decisions relying more on intuition than on any quantitative analytical decision technique. Mention five characteristics of the types of information that are responsible for this phenomenon in executive decision-making. **(5 Marks)**

Question 3

- (a) Define a 2-tier and a 3-tier architecture. **(2 Marks)**
- (b) What are the control techniques to be checked to ensure security for client/server technology? **(8 Marks)**
- (c) Describe four categories of risks that are to be considered during the transition from the mainframe (or PC) to client/server. **(10 Marks)**

Question 4

- (a) List the various sources of acquiring the software. **(5 Marks)**
- (b) Discuss four most compelling advantages of using a pre-written application package. **(5 Marks)**
- (c) "The final step of the system implementation is its evaluation." What functions are being served by the system evaluation? Discuss development, operation and information evaluations. **(10 Marks)**

Question 5

- (a) Write a detailed note on the expectations, fears and the ground realities that a corporate management faces during the post-implementation phase of ERP. **(10 Marks)**
- (b) What do you understand by ON-LINE, REAL-TIME SYSTEMS? **(5 Marks)**
- (c) For an On-line, Real-time sales order processing system, draw the systems flow chart. **(5 Marks)**

Question 6

- (a) Substantiate with reasons to the view that there is a steep rise in the Internet Computer fraud. Why many institutions are unable to contain it? **(5+5=10 Marks)**
- (b) Give an example of an Information Security Policy Statement. **(10 Marks)**

Question 7

Write short notes on the following:

(4×5=20 Marks)

- (a) Strategic and Tactical decisions.
- (b) Business Process Re-engineering
- (c) Encryption
- (d) System Development Life-cycle.

PAPER 6: MANAGEMTN INFORMATION AND CONTROL SYSTEMS
MAY 2004

Question No.1 is compulsory

Answer any four from the remaining six questions. All question carry equal marks.

Question 1

- (a) What are the powers of the Central Government to make rules, as given in Section 87, Chapter XIII of Information Technology Act, 2000? **(10 Marks)**
- (b) Briefly discuss the frame work on which the auditor should work for the audit of Computer Security. **(10 Marks)**

Question 2

- (a) What is a system development Life-cycle? **(2 Marks)**
- (b) Discuss the four steps of the prototyping approach in system development **(8 Marks)**
- (c) Explain three broad categories of the planning information requirements of executives. **(10 Marks)**

Question 3

- (a) What are the six important factors which should be considered while designing the user outputs? **(10 Marks)**
- (b) Describe any five program design tools. **(10 Marks)**

Question 4

- (a) Discuss the activities dealing with system development controls in EDP set up. **(10 Marks)**
- (b) What type of errors can corrupt a data code? **(5Marks)**
- (c) What are the computer frauds committed through input? **(5Marks)**

Question 5

- (a) "The Personnel information system is the backbone of any organization" **(2 Marks)**
- (b) Discuss various sub-systems of PIS, which are responsible to increase its operational efficiency. **(6 Marks)**
- (c) What is client-server technology? Enumerate any six of its benefits. **(3 + 9 Marks)**

Question 6

- (a) Explain in brief information security and its importance **(10 Marks)**
- (b) Explain the significance of ratio analysis generally carried out for financial analysis. **(6 Marks)**
- (c) Explain briefly the Profitability ratio **(4Marks)**

Question 7

Write short notes on any **four** of the following:

(4×5=20 Marks)

- (a) Internet frauds
- (b) Integrated test facility
- (c) Firewalls
- (d) Expert systems.

PAPER 6: MANAGEMTN INFORMATION AND CONTROL SYSTEMS
November 2003

Question No.1 is compulsory
Answer any four from the remaining six questions.

Question 1

- (a) What is the sole purpose of an Information System (IS) Audit? (2 Marks)
- (b) What is the role of an IS Auditor? (2 Marks)
- (c) While performing an IS Audit, the Auditor should make sure that various objectives are met. Briefly describe them. (6 Marks)
- (d) What are the different types of securities required for the Computer System? Explain briefly the different components of physical security of a computer installation. (10 Marks)

Question 2

- (a) Explain the role played by Financial Information System in making financial decisions. (8 Marks)
- (b) Describe briefly three levels of Management (3 Marks)
- (c) Mention atleast two pieces of information - one internal and one external – required at every one of the levels of Management. (6 Marks)
- (d) Discuss the potential impact of computer sand MIS at the top level of Management. (3 Marks)

Question 3

- (a) Describe the various components of Client Server Architecture. (8 Marks)
- (b) Bring out the reasons as to why the organizations fail to achieve their Systems Development Objectives? (12 Marks)

Question 4

- (a) Explain the different conversion strategies used for conversion from a manual to a computerized system. (5 Marks)
- (b) Discuss briefly the advantages and disadvantages of any one conversion strategy. (3 Marks)
- (c) For a material inventory control system, draw the system flowchart and explain the following:
 - (i) System interfaces
 - (ii) Files and inputs Reports. (12 Marks)

Question 5

- (a) What is and ERP (Enterprise Resource Planning) System? (2 Marks)
- (b) Write down the general guidelines which are to be followed before starting the implementation of an ERP package. (8 Marks)
- (c) Why should business take Computer Frauds seriously ? (10 Marks)

Question 6

- (a) Briefly describe any five core principles of Information Security. (10 Marks)
- (b) What are Case Tools ? Describe in depth the categories of case tools with examples. (10 Marks)

Question 7

(5×4=20 Marks)

Write short notes on any **four** of the following:

- (a) Executive Information Systems
- (b) System Manual
- (c) Digital Signature Certificate
- (d) Point scoring analysis in vendor evaluation
- (e) Transaction logs.

**PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
MAY 2003**

Question No.1 is compulsory.
Answer any four from the remaining six questions.

Question 1

- (a) Explain briefly the scope of the Information Technology Act, 2000 along with the relevant definitions that are used. **(10 Marks)**
- (b) Explain the role played by an information security administrator. **(10 Marks)**

Question 2

- (a) Discuss the effect of applying computer technology to Management Information system. **(10 Marks)**
- (b) Explain the concept of decomposition with the help of an example. **(10 Marks)**

Question 3

- (a) Describe briefly four categories of the major tools that are used for system development. **(10 Marks)**
- (b) Discuss various benefits which are attained by implementing a computerized model for making decision. **(10 Marks)**

Question 4

- (a) (i) What is an application software? **(2 Marks)**
(ii) Enumerate the advantages of prewritten application software packages. **(4 Marks)**
(iii) Discuss the factors upon which "Make or Buy" decision of an application software depends. **(4 Marks)**
- (b) Explain the process of evaluation of various ERP packages. **(10 Marks)**

Question 5

- (a) Why is personnel training important for the successful implementation of information system? What type of training should be imparted to (i) systems operator and (ii) users? **(10 Marks)**
- (b) Draw a payroll flow chart explaining the processes involved. **(10 Marks)**

Question 6

- (a) Discuss the various issues that are of primary concern for an auditor involved in information system audit. **(10 Marks)**
- (b) What is client/server? Describe the various characteristics that reflect the features of a client/server system. **(10 Marks)**

Question 7

Write short notes on any **four** of the following:

- (a) Meta-CASE Workbenches.
- (b) System Control Audit Review File (SCARF)
- (c) Disc Imaging and Analysis Technique
- (d) Materials Requirement Planning (MRP)
- (e) Personnel Computer Controls.

(5×4=20 Marks)

PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEMS
NOVEMBER 2002

Question No.1 is compulsory
Answer any four from the remaining six questions.

Question 1

- (a) Describe the major techniques of Concurrent Audit of Information Systems. Bring out the relevant of such Audit. (10 Marks)
- (b) What are the two major categories of exposures in the Communication sub-system including internet and intranet? What control mechanisms could be used to deal with them? (10 Marks)

Question 2

- (a) Differentiate among Strategic, Tactical and Operational categories of Information required for different levels of Managerial decision making. (8 Marks)
- (b) In what ways does an Executive Information system differ from the Traditional Information System? (12 Marks)

Question 3

- (a) Explain the major categories of risks involved in transition from the mainframe Computers to client servers? (8 Marks)
- (b) Describe the steps involved in prototyping for systems development (8 Marks)
- (c) If you are the Project Manger of Software Company with the responsibility for developing a break-through product, combining state of the art hardware and software, will you opt for prototyping as a process model for a product meant for the intensely competitive entertainment market? (4 Marks)

Question 4

- (a) What is an ERP system? Bring out the major challenges involved in its implementation. (10 Marks)
- (b) Draw a system flow chart for a production scheduling system (6 Marks)
- (c) What systems interfaces are involved in Production Planning? (4 Marks)

Question 5

- (a) What is a Digital Signature? How is it used? What are the duties of certifying authorities in regard to its usage? (10 Marks)
- (b) What are the core principles of Information Security? (10 Marks)

Question 6

- (a) What measures can be adopted to detect Computer Frauds? (10 Marks)
- (b) What are the major factors to be considered in designing User Inputs? Explain. (10 Marks)

Question 7

(5×4=20 Marks)

Write short notes on the following:

- (a) Data Dictionary
- (b) CASE Tools
- (c) Decision Support Systems
- (d) System Maintenance.

**PAPER : 6- SYSTEM ANALYSIS, DATA PROCESSING & QUANTITATIVE TECHNIQUES
MAY 2002**

Question 1 is compulsory. Answer any four from the remaining six questions.

Question 1

- (a) Discuss various constraints that come in the way of operating an effective M.I.S. how these constraints could be avoided? **(10 Marks)**
- (b) A farm is engaged in breeding pigs. The pigs are fed on various products grown in the farm. In view of the need to ensure certain nutrient constituents (call them x, y and z) it becomes necessary to buy two additional products say A and B. One unit of product A contains 36 units of x, 3 units of y and 10 units of z. the minimum requirement of x, y and z is 108 units, 36 units and 100 units respectively. Product A costs Rs.20 per unit and Product b costs Rs.40 per unit.
Formulate the above as a linear programming problem to minimize the total cost and solve this problem by using graphic method. **(10 Marks)**

Question 2

- (a) What do you understand by “requirement analysis”? what is the significance of analyzing the present system and how is it carried out? Explain briefly. **(10 Marks)**
- (b) An Electronic Data Processing (EDP) has three expert software professionals. The centre wants three application software programs to be developed. The head of EDP Centre estimates the computer time in minutes required by the experts for development Application Software Programs as follows:

Software Programs	Computer time(in minutes) Required by Software Professionals		
1.	100	85	70
2.	50	70	110
3.	110	120	130

Assign the software professionals to the application software programs to ensure minimum usage of computer time.

Question 3

- (a) For an online real time sales order processing system, draw a system flow chart and explain the following:
- Transactions
 - Files
 - Processing
 - Output reports and documents. **(10Marks)**
- (b) A product is manufactured by four factories A, B, C and D. The unit production costs are Rs.2, Rs.3, Rs.1 and Rs.5 respectively. Their daily production capacities are 50, 70, 30 and 50 units respectively. These factories supply the product to four stores P, Q, R and S. the demands made by these stores are 25, 35, 105 and 20 units respectively. Unit transportation cost in rupees from each factory to each store is given in the following table:

	Stores			
	P	Q	R	S
2	4	6	11	
10	8	7	5	
13	3	9	12	
4	6	8	3	

Determine the extent of deliveries from each of the factories to each of the stores so that the total cost (production and transportation together) is minimum.. **(10 marks)**

Question 4

- (a) What are the major reasons for the development of methods standard? **(5 Marks)**
- (b) Discuss various testing procedures to be adopted by the programmer in order to make the program error free. **(5 Marks)**
- (c) Workers come to a storeroom to receive components for a particular project assigned to them. The average time between two arrivals is 60 seconds and the arrivals are assumed to be in Poisson distribution. The average service time by the storekeeper is 40 seconds.
Determine the following:
- Average queue length
 - Average length of non-empty queues
 - Average number of workers in system including the worker being attended to
 - Average waiting time of an arrival in the queue
 - Average waiting time of an arrival (worker) who waits.

Question 5

- (a) Explain briefly the stages through which the program has to pass during its development. **(10 Marks)**
- (b) A small project consists of jobs as given in the table below. Each job is listed with its normal time and a minimum or crash time (in days). This cost (in Rs. per day) of each job is also.

Job(i-j)	Normal duration (in days)	Minimum (crash) Duration(in days)	Cost of crashing(Rs. per day)
1-2	9	6	20
1-3	8	5	25
1-4	15	10	30
2-4	5	3	10
3-4	10	6	15
4-5	2	1	40

1. What is the normal project length and the minimum project length?
2. Determine the minimum crashing cost of schedule ranging from normal length down to, and including the minimum length schedule. That is, if L = Length of the schedule, find the costs of schedules which are L , $L-1$, $L-2$ and so on.
3. Overhead costs total Rs.60 per day. What is the optimum length schedule in terms of both crashing and overhead cost? List the schedule duration of each job for your solution. **(10 Marks)**

Question 6

- (a) Explain, why Data Communication Security is more essential. In order to ensure the security the security while communicating the data, what kind of controls you would like to employ? Explain them briefly.
- (b) A Car Manufacturing Company manufactures 40 cars per day. The sales of cars depend upon demand which has the following distribution:

Sales of Cars	Probability
37	0.10
38	0.15
39	0.20
40	0.35
41	0.15
42	0.05

The production cost and sales price of each car are Rs.4 lakh and 5 lakh respectively. Any unsold car is to be disposed off at a loss of Rs.2 lakh per car. There is a penalty of Rs. 1 lakh per car, if the demand is not met. Using the following random numbers, estimate total profit/loss for the company for the next ten days:

9	98	64	98	94	01	78	10	15	19
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If the company decides to produce 39 cars per day, what will be its impact on profitability?

Question 7

(5×4=20 Marks)

Write short notes on the following?

- (i) Roll- back Technique in Decision Tree
- (ii) Benefits of Enterprise Resources Planning
- (iii) Resources Smoothing and Resource Levelling
- (iv) Material Requirement Planning

PAPER 6 : SYSTEM ANALYSIS DATA PROCESSING & QUANTITATIVE TECHNIQUES
NOVEMBER 2001

Question No.1 is compulsory
Answer any four from the remaining questions.

Question 1

- (a) What are different categories of Information Systems? Explain each one of them briefly. **(10 Marks)**
- (b) A Sports Club is engaged in the development of their players by feeding them certain minimum amount of Vitamins (say A, B and C), in addition to their normal diet. In view of this, two types of products X and Y are purchased from the market. The contents of Vitamin constituents per unit, are shown in the following table:

Vitamin Constituents	Vitamin contents in products		Minimum requirement for each player
	X	Y	
A	36	06	108
B	03	12	36
C	20	10	100

The cost of product X is Rs.20 and that of Y is Rs.40.

Formulate the linear programming problem for the above and minimize the total cost, and solve problem by using graphic method. **(10 Marks)**

Question 2

- (a) What are different Performance Standards? List out the major advantages of performance standards. **(5 Marks)**
- (b) "In order to improve current information systems and to develop new ones, several System Development Tools have been developed." What are these system development tools? Explain them briefly. **(5 Marks)**
- (c) A production supervisor is considering, how he should assign five jobs that are to be performed, to five mechanists working under him. He wants to assign the jobs to the mechanists in such manner that the aggregate cost to perform the jobs is the least. He has following information about the wages paid to the mechanists for performing these jobs:

Mechanist	Jobs				
	1	2	3	4	5
A	10	3	3	2	8
B	9	7	8	2	7
C	7	5	6	2	4
D	3	5	8	2	4
E	9	10	9	6	10

Assign the jobs to the mechanists so that the aggregate cost is the least.

(10 Marks)

Question 3

- (a) Describe briefly the points to be considered while designing the inputs for the computerized systems. **(5 Marks)**
- (b) Explain the characteristics of a good coding scheme. Enumerate and discuss some of the commonly used coding schemes. **(5 Marks)**
- (c) A Compressed Natural Gas (CNG) company has three plants producing gas and four outlets. The cost of transporting gas from different production plants to the outlets, production capacity of each plant and requirement at different outlets is shown in the following cost-matrix table:

Plants	Outlets				Capacity of Production
	A	B	C	D	
X	4	6	8	6	700
Y	3	5	2	5	400
Z	3	9	6	5	600

Requirement	400	450	350	500	1,700
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Determine a transportation schedule so that the cost is minimized.

The cost in the cost-matrix is given in thousand of rupees.

(10 Marks)

Question 4

- (a) Discuss the basic functions to be performed by the Computer Service Department of a firm dealing with computer hardware and software. **(5 Marks)**
- (b) Describe five advantages of Standardization. **(5 Marks)**
- (c) At a certain filling station, customers arrive in a Poisson process with an average time of 12 per hour. The time intervals between services follow exponential distribution and as such the mean time taken to service a unit is 2 minutes. Evaluate: **(10 Marks)**
- the probability that there is no customer at the counter,
 - the probability that there are more than two customers at the counter,
 - the probability that there is no customer to be served,
 - the probability that a customer is being served, but no body is waiting.
 - the expected number of customers in the waiting line, and
 - the expected time a customer spends in the system.

Question 5

- (a) What functions are performed by the “work-in-process control system”? Draw the system flow chart and explain the following: **(10 Marks)**
- System Interfaces
 - Files and Inputs
 - Reports.
- (b) An Engineering Project has the following activities, whose time estimates are listed below:

Activity (i-j)	Estimated duration (in months)		
	Optimistic	Most likely	Pessimistic
1-2	2	2	14
1-3	2	8	14
1-4	4	4	16
2-5	2	2	2
3-5	4	10	28
4-6	4	10	16
5-6	6	12	30

- Draw the project network and find the critical path.
- Find the expected duration and variance for each activity. What is the expected project length?
- Calculate the variance and standard deviation of the project length.
- What is the probability that the project will be completed at least eight months earlier than expected time?
- If the project due date is 38 months, what is the probability of not meeting the due date? Given:

Z	0.50	0.67	1.00	1.33	2.00
Prob.	0.3085	0.2514	0.1587	0.0918	0.0228

(10 Marks)

Question 6

- (a) Explain different File Control procedures. **(10 Marks)**
- (b) A Cell Phone Company located in Bangalore wants to determine the number of units of cell phone to be stocked on monthly basis. The past pattern of demand for cell phone units is as under:

Units sold per month	100	101	102	103	104	105
No. of months	20	40	5	10	20	5

Assuming that the stock levels of cell phones are restricted to the range 101-105 and that cell phones left unsold at the end of the month must be sent back to the Head Office at Mumbai. The cell phones costs Rs.3,000 to the company, which it sells for Rs.4,000.

From the above:

- (i) Construct a conditional pay-off table.
- (ii) Determine the action alternatives with the expected profit.
- (iii) Determine EVPI.

(10 Marks)

Question 7

Write short notes on the following:

(5×4=20)

- (i) Programmed and non-programmed decisions
- (ii) General frame work of PERT/CPM.
- (iii) Monte Carlo simulation.
- (iv) Program debugging.

PAPER 6: SYSTEM ANALYSIS DATA PROCESSING & QUANTITATIVE TECHNIQUES
MAY 2001

Question No.1 is compulsory
Answer any four from the remaining questions.

Question 1

- (a) Discuss the various factors on which the information requirements of executives depend **(10 marks)**
(b) A Computer Company produces three types of models, which are first required to be machined and then assembled. The time (in hours) for these operations for each model is given below:

Model	Machine time	Assembly Time
P III	20	5
P II	15	4
Celeron	12	3

The total available machine time and assembly time are 1,000 hours and 1,500 hours respectively. The selling price and other variable costs for three models are:

	P III	PII	Celeron
Selling Price(Rs.)	3,000	5,000	15,000
Labour, Material and Variable Costs(Rs)	2,000	4,000	8,000

The company has taken a loan of Rs.50, 000 from a Nationalized Bank, which is required to be repaid on 1.4.2001. In addition, the company has borrowed Rs.1, 00,000 from XYZ Cooperative Bank. However, this bank has given its consent to renew the loan.

The Balance Sheet of the company as on 31.3.2001 is as follows:

Liabilities	Rs.	Assets	Rs
Equity Share Capital	1,00,000	Land	80,000
Capital reserve	20,000	Buildings	50,000
Profit & Loss Account	30,000	Plant & Machinery	1,00,000
Long-term Loan	2,00,000	Furniture etc	20,000
Loan from XYZ		Vehicles	40,000
Cooperative Bank	1,00,000	Cash	2,10,000
Loan from Nationalized	50,000		
Total	5,00,000	Total	5,00,000

The company is required to pay a sum of Rs.15,000 towards the salary. Interest on long-term loan is to be paid every month @18% per annum. Interest on loan from XYZ Cooperative and Nationalized Banks may be taken as Rs.1, 500 per month. The company has already promised to deliver three PIII, Two PII and five Celeron types of Computers to M/s ABC Ltd. Next month. The level of operation in the company is subject to the availability of cash next month.

The Company Manager is willing to know that how many units of each model must be manufactured next month, so as to maximize the profit

Formulate a linear programming problem for the above.(10 marks)

Question 2

- (a) Explain the term CASE tools. Describe briefly various CASE tools **(5 Marks)**
(b) What is an Executive Information System (EIS)? Discuss its various characteristics **(5 Marks)**
(c) A project consists of four (4) major jobs, for which four (4) contractors have submitted tenders. The tender amounts, in thousands of rupees, are given below:

Contractors	Jobs			
	A	B	C	D

1	120	100	80	90
2	80	90	110	70
3	110	140	120	100
4	90	90	80	90

Find the assignment, which minimizes the total cost of the profit. Each contractor has to be assigned one job
(10 marks)

Question 3

- (a) Explain the benefits of centralized and decentralized data processing approaches (5 marks)
 (b) Explain the various general components of Disaster recovery Plan. (5 marks)
 (c) A company has 3 plants and 3 warehouses. the cost of sending a unit from different plants to the warehouses, production at different plants and demand at different warehouses are shown in the following cost matrix table:

Plants	Warehouses			Production
	A	B	C	
X	8	16	16	152
Y	32	48	32	164
Z	16	32	48	154
Demand	144	204	82	

Determine a transportation schedule, so that the cost is minimized. Assume that the cost in the cost matrix is given thousand of rupees.
(10 marks)

Question 4

- (a) Discuss the various factors, which a system analyst should consider while designing user output. (5 Marks)
 (b) Discuss in brief the duties of a top computer executive of a Computer Center (5 Marks)
 (c) In a particular single server system, the arrival rate $\lambda=5$ per hour, and the service rate $\mu=8$ per hour. Assuming the conditions regarding the use of single channel queuing model; find:
 1. the probability that server is idle
 2. the probability that there are at least 3 customers in the system
 3. expected time that a customer is in the system
 4. expected time that a customer is in the system
 5. expected number of customer in the waiting line
 State the model assumed for the arrivals as well as the service time. (10 Marks)

Question 5

- a) For a Material Inventory Control system, draw the system flowchart and explain the following:
 i. System Interfaces
 ii. Files and Inputs
 iii. Reports (10 marks)
 b) Consider the schedule of activities and related information as given below, for the construction of a Plant:

Activity	Expected Time (Months)	Variance	Expected Cost (Millions of Rs.)
1-2	4	1	5
2-3	2	1	3
3-6	3	1	4
2-4	6	2	9
1-5	2	1	2
5-6	5	1	12
4-6	9	5	20
5-7	7	8	7

7-8	10	16	14
6-8	1	1	4

Assuming that the cost and time required for one activity is independent of the time and cost of any other activity and variations are expected to follow normal distribution, draw a network based on the above data and calculate:

- 1) Critical path
- 2) Expected cost of construction of the plant
- 3) Expected time required to build the plant
- 4) The Standard Deviation of the expected time. **(10 marks)**

Question 6

- a) Describe the steps which are essential to ensure the software and data security in a Computer Department. **(10 marks)**
- b) An investment company wants to study the investment projects based on market demand, profit and the investment required, which are independent of each other. Following probability distribution are estimated for each of these three factors:

Annual Demand (Units in thousands):	25	30	35	40	45	50	55
Probability	0.05	0.10	0.20	0.30	0.10	0.10	0.05

Profit per Unit:	3.00	5.00	7.00	9.00	10.00
Probability:	0.10	0.20	0.40	0.20	0.10

Investment Required (in thousands of Rupees) :	2,750	3,000	3,500
Probability :	0.25	0.50	0.25

Using simulation process, repeat the trial 10 times, compute the investment on each trial taking these factors into trial. What is the most likely return?

Use the following random numbers:

(30, 12, 16);	(59, 09, 69);	(63, 94, 26);	(27, 08, 74);
(64, 60, 61);	(28, 28, 72);	(31, 23, 57);	(54, 85, 20);
(64, 68, 18);	(32, 31, 87).		

In the brackets above, the first random number is for annual demand, the second one is for profit and the last one is for the investment required. **(10 marks)**

Question 7

Write short notes on the following:

1. E-commerce
2. System Testing
3. System Maintenance
4. Maximax and Maximin criteria of decision-making. **(5 × 4 = 20 marks)**

PAPER 6: SYSTEM ANALYSIS DATA PROCESSING AND QUANTITATIVE TECHNIQUES
NOVEMBER 2000

Question No.1 is compulsory
Answer any four from the remaining questions.

Question 1

- (a) Define Personal Information system. What sub-systems are generally responsible to control the operational efficiency of the Personnel Management? Explain each one of them **(10 Marks)**
- (b) A manufacturer produces three products Y1, Y2, Y3 from three raw materials X1, X2, X3 is Rs.30, Rs.50 and RS.120 per Kg respectively and they are available in a limited viz., 20 kg of X1, 15 kg of X2 and 10 kg of X3. The selling price of Y1, Y2 and Y3 is Rs.90, Rs.100 and Rs.120 per kg respectively. In order to produce one kg of Y1, $\frac{1}{2}$ kg of X1, $\frac{1}{4}$ kg of X2 and $\frac{1}{4}$ kg of X3 are required. Similarly to produce 1 kg of Y2, $\frac{3}{7}$ kg of X1, and $\frac{2}{7}$ kg of X2 and $\frac{2}{7}$ kg of X3 and to produce 1 kg Y3, $\frac{2}{3}$ kg of X2 and $\frac{1}{3}$ kg of X3 will be required.
Formulate the linear programming problem to maximize the profit **(10 Marks)**

Question 2

- (a) What is the system development Life cycle? Explain the different activities coming under this cycle. **(10 Marks)**
- (b) A car hiring company has one car at each of the five deposits A, B, C, D and E. A customer in each of the five towns V, W, X, Y and Z requires a car. the distance in kms, between depots (origin) and the towns (destination) are given in the following table:

	A	B	C	D	E
V	3	5	10	15	8
W	4	7	15	18	8
X	8	12	20	20	12
Y	5	5	8	10	6
Z	10	10	15	25	10

Find out as to which car should be assigned to which customer so that the total distance traveled is a minimum. How much is the total traveled distance? **(10 Marks)**

Question 3

- (a) For a production scheduling system, draw the system flow chart and explain the following:
- (i) System interfaces
 - (ii) Files and inputs
 - (iii) Output reports
- (b) Following is the profit matrix based on four factories and three sales depots of the company:

Factories	Sales deposits			Availability
	S1	S2	S3	
F1	6	6	1	10
F2	-2	-2	-4	150
F3	3	2	2	50
F4	8	5	3	100
Requirement	80	120	150	

Determine the most profitable distribution schedule and the corresponding profit, assuming no profit in case of surplus production **(10 Marks)**

Question 4

- (a) Discuss various objectives and factors that should be kept in mind while designing outputs from an information system **(10 Marks)**

- (b) At a certain petrol pump, customers arrive in a Poisson process with an average time of 5 minutes between arrivals. The time interval between servers at the petrol pump follows an exponential distribution and the mean time taken to service a unit is 2 minutes. Find the exponential distribution and the mean time taken to service a unit is 2 minutes. Find the following:
- Expected average queue length
 - Average number of customers in the system
 - Average time a customer has to wait in the queue
 - Average time a customer has to spend in the system
 - By how much time the flow of the customer be increased to justify the opening of another service point, where the customer has to wait for 5 minutes for the service? **(10 Marks)**

Question 5

- Explain the distinction between Centralization and Decentralization of an Authority **(5 Marks)**
- Discuss the benefits of centralized data processing approach **(5 Marks)**
- The time schedule for different activities of a project is given below:

Activity(i-j)	Time in days
1-2	8
1-3	10
1-4	8
2-3	10
2-6	16
3-5	17
4-5	18
4-6	14
5-6	9

Construct the PERT network and compute

- Critical path and its duration
- Total and free float for each activity **(10 Marks)**

Question 6

- What are the different types of securities required for a computer system? Explain briefly the different components of physical security **(10 Marks)**
- A retailer deals in a particular commodity. The daily demand and supply are variables. The data for the past 500 days show the following demand and supply:

Supply		Demand	
Availability	No of Days	Demand	No of days
10	40	10	50
20	50	20	110
30	190	30	200
40	150	40	100
50	70	50	40

The retailer buys the commodity at Rs.20 per kg and sells it at Rs.30per kg.Any commodity remains at the end of the day, has no saleable value. Moreover, the loss (unearned profit) on any unsatisfied demand is Rs.8 per kg given the following pair of random numbers; simulate 6 days sales, demand and profit.

(31, 18); (63, 84); (15, 79); (07, 32); (43, 75); (81, 27)

The first random number in the pair is for supply and the second random number is for demand viz.in the first pair (31, 18), use 31 to stimulate supply and 18 to stimulate demand **(10 Marks)**

Question 7

Write short notes on any four of the following:

- (i) Enterprise Resource Planning (ERP)
- (ii) Information systems Audit
- (iii) Computer aided Software Engineering (CASE) tools
- (iv) Distinction between PERT and CPM
- (v) Applications and limitations of Linear Programming Techniques

(5×4=20 Marks)

PAPER 6: SYSTEM ANALYSIS DATA PROCESSING AND QUANTITATIVE TECHNIQUES
MAY 2000

Question No.1 is compulsory.
Answer any four from the remaining six questions.

Question 1

- (a) Discuss the three approaches of MIS development. **(10 Marks)**
- (b) In a chemical industry two products A and B are made involving two operations. The production of B also results in a by-product C. The product A can be sold at a profit of Rs.3 per unit and B at a profit of Rs.8 per unit. The by-product C has a profit of Rs.2 per unit. Forecasts show that up to 5 units of C can be sold. The company gets 3 units of C for each unit of B produced. The manufacturing times are 3 h per unit for A on each of the operation one and two and 4 h and 5 h per unit for B on operation one and two respectively. Because the product C results from producing B, no time is used in producing C. The available times are 18 h and 21 h of operation one and two respectively. The company desires to know that how much A and B should be produced keeping C in mind to make the highest profit. Formulate LP model for this problem. **(10 Marks)**

Question 2

- (a) Explain prototyping approaches to systems development. **(5 Marks)**
- (b) What are the advantages of prototyping approaches? **(5 Marks)**
- (c) ABC airline operating 7 days a week has given the following time-table. Crews must have a minimum layover of 5 hours between flights. Obtaining the pairing flights that minimizes the layover time away from home. For any given pairing the crew will be based at the city that results in the smaller layover. **(10 Marks)**

Hyderabad – Delhi			Delhi – Hyderabad		
Flight No	Depart.	Arrive	Flight No	Depart.	Arrive
A1	6 A.M.	8 A.M.	B1	8 A.M.	10 A.M.
A2	8 A.M.	10 A.M.	B2	9 A.M.	11 A.M.
A3	2 P.M.	4 P.M.	B3	2 P.M.	4 P.M.
A4	8 P.M.	10 P.M.	B4	7 P.M.	9 P.M.

Question 3

- (a) Draw the system flow chart for a materials inventory control system and explain the factors involved in its design. **(10 Marks)**
- (b) A project has the following time schedule: **(10 Marks)**

Activity	Time in weeks	Activity	Time in weeks
1-2	4	5-7	8
1-3	1	6-8	1
2-4	1	7-8	2
3-4	1	8-9	1
3-5	6	8-10	8
4-9	5	9-10	7
5-6	4		

Construct a PERT network and compute:

- (i) T_E and T_L for each event;
- (ii) Float for each activity; and
- (iii) Critical path and its duration.

Question 4

- (a) In what different ways could system conversion from old system to the new one take place? Explain briefly. **(10 Marks)**
- (b) A company produces a small component for all industrial products and distributes it to five wholesalers at a fixed price of Rs.2.50 per unit. Sales forecasts indicate that monthly deliveries will be 3,000, 5,000, 10,000, 5,000 and 4,000 units to wholesalers 1,2,3,4 and 5 respectively. The monthly production capabilities are 5,000, 10,000, 12,500 at plants 1,2 and 3 respectively. The direct costs of production of each unit are Rs.1.00, Rs.0.90 and Rs.0.80 at plants 1,2 and 3 respectively. The transportation costs of shipping a unit from a plant to a wholesaler are given below:

		Wholesaler				
		1	2	3	4	5
Plant	1	0.05	0.07	0.10	0.15	0.15
	2	0.08	0.06	0.09	0.12	0.14
	3	0.10	0.09	0.08	0.10	0.15

Find how many components each plant supplies to each wholesaler in order to maximize profit.

(10 Marks)

Question 5

- (a) Many computer users consider recruiting, training and retaining qualified personnel as their greatest problem. Why? **(5 Marks)**
- (b) Explain the role of user support manager. **(5 Marks)**
- (c) A book-store wishes to carry Systems Analysis and Design in stock. Demand is probabilistic and replenishment of stock takes 2 days (i.e., if an order is placed in March 1, it will be delivered at the end of the day on March 3). The probabilities of demand are given below:

Demand (daily)	0	1	2	3	4
Probability	0.05	0.10	0.30	0.45	0.10

Each time an order is placed, the store incurs an ordering cost of Rs.10 per order. The store incurs a carrying cost of Rs.0.50 per book per day. The inventory carrying cost is calculated on the basis of stock at the end of each day. The manager of the book-store wishes to compare two options for his inventory decision:

- A. Order 5 books, when the inventory at the beginning of the day plus orders outstanding is less than 8 books.
- B. Order 8 books, when the inventory at the beginning of the day plus orders outstanding is less than 8 books.

Currently (beginning of the 1st day) the store has stock of 8 books plus 6 books ordered 2 days ago and expected to arrive next day. Using Monte-Carlo simulation for 10 cycles, recommend which option the manager should choose?

The two digit random numbers are given below: 89, 34, 78, 63, 61, 81, 39, 16, 13, 73.

(10 Marks)

Question 6

- (a) Discuss the benefits which accrue to the user of good methods and performance standards. **(5 Marks)**
- (b) Explain the main functions of the manual of standards. **(5 Marks)**
- (c) A fertilizer company distributes its products by trucks loaded at its only loading station. Both company trucks and contractor's trucks are used for this purpose. It was found out that on an average one truck arrived at every five minutes and the average loading time was 3 minutes. 40% of the trucks belong to contractors. You are required to determine:
- (i) The probability that the truck has to wait.

(ii) The waiting time of a truck that waits.

(iii) The expected waiting time of contractor's trucks per day. Assume that the company has 24 hrs. shift.

(10 Marks)

Question 7

Write short notes on the following:

(5+5+5+5)

- (i) Bench Marking Problem for Vendor's Proposals
- (ii) File Control.
- (iii) Decision Trees
- (iv) Resources Levelling.

PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
NOVEMBER 1999

Question number 1 is compulsory
Answer any four from the remaining six questions.

Question 1

- (a) What are the main pre-requisites of an effective MIS? Explain them briefly. **(10 Marks)**
- (b) An advertising firm desires to reach two types of audiences- customers with annual income of more than Rs.40,000 (target audience A) and customers with annual income of less than Rs.40,000 (target audience B). The total advertising budget is Rs.2,00,000. One programme of T.V. advertising costs Rs.50,000 and one programme of Radio advertising costs Rs.20,000. Contract conditions ordinarily require that there should be at least 3 programmes on T.V. and the number of programmes on Radio must not exceed 5. Survey indicates that a single T.V. programme reaches 7,50,000 customers in target audience A and 1,50,000 in target audience B. One Radio programme reaches 40,000 customers in target audience A and 2,60,000 in target audience B. Formulate this as a linear programming problem and determine the media mix to maximize the total reach using graphic method. **(10 Marks)**

Question 2

- (a) What are main objectives of a production scheduling department? **(5 Marks)**
- (b) Distinguish between top down and bottom up approaches to systems development. **(5 Marks)**
- (c) The following table shows all the necessary information on the available supply to each warehouse, the requirement of each market and the unit transportation cost from each warehouse to each market:

		Market				
Warehouse	A	I	II	III	IV	Supply
	B	4	8	1	6	15
	C	4	6	7	5	8
Requirement		7	12	17	9	

The shipping clerk has worked out the following schedule from his experience:

12 Units from A to II
1 Unit from A to III
9 Units from A to IV
15 Units from B to III
7 Units from C to I and
1 Unit from C to III.

You are required to answer the following:

- (i) Check and see if the clerk has the optimal schedule;
- (ii) Find the optimal schedule and minimum total shipping cost; and
- (iii) If the clerk is approached by a carrier of route C to II, who offers to reduce his rate in the hope of getting some business, by how much should the rate be reduced before the clerk should considering giving him an order? **(10 Marks)**

Question 3

- (a) What is data flow diagram? Explain briefly with suitable example. **(5 Marks)**
- (b) Explain the two primary methods by which an analyst collects the data during preliminary investigation. **(5 Marks)**
- (c) Solve the assignment problem represented by the following effective matrix:

	a	b	c	d	e	f
A	9	22	58	11	19	27
B	43	78	72	50	63	48

C	41	28	91	37	45	33
D	74	42	27	49	39	32
E	36	11	57	22	25	18
F	3	56	53	31	17	28

Question 4

(a) For a cost estimation system, draw the system flow chart and explain the following:

- System interfaces
- Files and inputs
- Reports.

(10 Marks)

(b) A project has the following time schedule:

Activity	Time in Weeks	Activity	Time in Weeks
1-2	2	4-6	3
1-3	2	5-8	1
1-4	1	6-9	5
2-5	4	7-8	4
3-6	8	8-9	3
3-7	5		

Construct PERT network and compute:

- total float for each activity; and
- critical path and its duration.

(10 Marks)

Question 5

(a) Discuss the basic functions and activities of a Computer Service Centre. (5 Marks)

(b) Explain the main reasons for the development of performance standards. (5 Marks)

(c) A foreign bank is considering opening a drive-in window for customer service. Management estimates that customers will arrive for service at the rate of 12 per hour. The teller whom it is considering to staff the window can serve customers at the rate of one every three minutes. Assuming Poisson arrivals and Exponential service, find:

- Utilization of teller
- Average number in the system
- Average waiting time in line
- Average waiting time in the system.

(10 Marks)

Question 6

(a) What is the year 2000 problem? Suggest ways and means to tackle this problem. (10 Marks)

(b) A bakery shop keeps stock of a popular brand of cake. Previous experience indicates the daily demand as given here:

Daily Demand	0	10	20	30	40	50
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Consider the following sequence of random numbers: R. No. 48, 78, 19, 51, 56, 77, 15, 14, 68, 09.

Using this sequence, simulate the demand for the next 10 days. Find out the stock situation if the owner of the bakery decides to make 30 cakes every day. Also, estimate the daily average demand for the cakes on the basis of simulated data. (10 Marks)

Question 7

(a) Discuss the following:

- Various steps involved in selection of a computer system. (5 Marks)
- Various controls necessary for on-line and data communication systems. (5 Marks)

- (b) A T.V. dealer finds that the cost of a T.V. in stock for a week is Rs.30.00 and the cost of a unit storage is Rs.70.00. For one particular model of T.V., the probability distribution of weekly sale is as follows:

Weekly Sales	0	1	2	3	4	5	6
Probability	0.10	0.10	0.20	0.25	0.15	0.15	0.05

How many units per week should the dealer order? Also, find E.V.P.I.

(10 Marks)

**PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
MAY 1999**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1

- (a) Discuss the characteristics of an effective Management Information System. **(10 Marks)**
- (b) Let us assume that you have inherited Rs.1,00,000 from your father-in-law that can be invested in a combination of only two stock portfolios, with the maximum investment allowed in either portfolio set as Rs.75,000. The first portfolio has an average rate of return of 10%, whereas the second has 20%. In terms of risk factors associated with these portfolios, the first has a risk rating of 4 (on a scale from 0 to 10), and the second has 9. Since you wish to maximize your return, you will not accept an average rate of return below 12% or a risk factor above 6. Hence, you then face the important question. How much should you invest in each portfolio?

Formulate this as a Linear Programming Problem and solve it by Graphic Method. **(10 Marks)**

Question 2

- (a) Discuss in detail, how the analysis of present system is made by the system analyst. **(10 Marks)**
- (b) To stimulate interest and provide an atmosphere for intellectual discussion, a finance faculty in a management school decides to hold special seminars on four contemporary topics: leasing, portfolio management, private mutual funds, swaps and options. Such seminars should be held once in a week in the afternoons. However, scheduling these seminars (one for each topic, and not more than one seminar per afternoon) has been to be done carefully so that the number of students unable to attend is kept to a minimum. A careful study indicates that the number of students who cannot attend a particular seminar on a specific day is as follows:

	Leasing	Portfolio Management	Private Mutual Fund	Swaps & Options
Monday	50	40	60	20
Tuesday	40	30	40	30
Wednesday	60	20	30	20
Thursday	30	30	20	30
Friday	10	20	10	30

Find an optimal schedule of the seminars. Also find out the total number of students who will be missing at least one seminar. **(10 Marks)**

Question 3

- (a) Explain in detail, the guidelines that should be observed for “form design”. **(10 Marks)**
- (b) A company has three warehouses W_1 , W_2 and W_3 . It is required to deliver a product from these warehouses to three customers A, B and C. The warehouses have the following units in stock:

Warehouse	W_1	W_2	W_3
No. of Units	65	42	43

And customer requirements are:

Customer	A	B	C
No. of Units	70	30	50

The table below shows the cost of transporting one unit from warehouse to the customer:

		Warehouse		
		W ₁	W ₂	W ₃
Customer	A	5	7	8
	B	4	4	6
	C	6	7	7

Find the optimal transportation route.

(10 Marks)

Question 4

- (a) Discuss briefly, various activities that are involved for successful conversion of an existing manual system to a computerized information system. **(10 Marks)**
- (b) A company manufactures around 200 mopeds. Depending upon the availability of raw materials and other conditions, the daily production has been varying from 196 mopeds to 204 mopeds whose probability distribution is as given below:

Production per day	Probability
196	0.05
197	0.09
198	0.12
199	0.14
200	0.20
201	0.15
202	0.11
203	0.08
204	0.06

The finished mopeds are transported in a specially designed three storeyed lorry that can accommodate only 200 mopeds. Using the following 15 random numbers 82, 89, 78, 24, 53, 61, 18, 45, 04, 23, 50, 77, 27, 54, 10, simulate the process to find out:

- (i) What will be the average number of mopeds, waiting in the factory?
- (ii) What will be the average number of empty spaces on the lorry?

(10 Marks)

Question 5

- (a) List the advantages and disadvantages of using a computer service bureau for a medium sized business organization. **(10 Marks)**
- (b) Arrivals at a telephone booth are considered to be Poisson, with an average time of 10 minutes between one arrival and the next. The duration of the phone call is assumed to be distributed exponentially, with mean 3 minutes.
- What is the probability that a person arriving at the booth will have to wait?
 - The telephone department will install a second booth when convinced that an arrival would expect waiting for at least 3 minutes for phone. By how much should the flow of arrivals increase in order to justify a second booth?
 - Find the average number of units in the system.

iv. Estimate the fraction of a day that the phone will be in use.

(10 Marks)

Question 6

(a) Explain the various measures that can be taken to ensure software and data security in an organization. **(10 Marks)**

(b) Given the following information:

Activity	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration (in days)	2	8	10	6	3	3	7	5	2	8

- (i) Draw the arrow diagram.
- (ii) Identify critical path and find the total project duration.
- (iii) Determine total, free and independent floats.

(10 Marks)

Question 7

Write short notes on the following:

(5+5+5+5)

- (i) Payroll accounting.
- (ii) Disaster recovery.
- (iii) Resource smoothing.
- (iv) Expected value of perfect information.

**PAPER 6: SYSTEM ANALYSIS DATA PROCESSING AND QUANTITATIVE TECHNIQUES
NOVEMBER 1998**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1

- (a) What are the major constraints in operating the MIS? Discuss them briefly. **(5 Marks)**
- (b) Information requirements depend upon various factors. What are these factors? Discuss them. **(5 Marks)**
- (c) A Company has three operational departments (Weaving, processing and packing) with capacity to produce three different types of clothes namely suitings, shirtings and woollens yielding the profit Rs. 2, Rs. 4 and Rs.3 per meter respectively. One meter suiting requires 3 minutes in weaving , 2 minutes in processing and 1 minute in packing. Similarly one meter of shirting requires 4 minutes in weaving, 1 minute in processing and 3 minute in packing while one meter woollen requires 3 minute in each department. In a week total run time of each department is 60,40,and 80 hours for weaving, processing and packing departments respectively.
Formulate the linear programming problem to find the product mix to maximize the profit. **(10 Marks)**

Question 2

- (a) (i) What is an application software? **(2 Marks)**
(ii) Enumerate the advantages of pre-written application software packages. **(2 Marks)**
(iii) Discuss the factors upon which “make or buy” decision of an application software Depends? **(3 Marks)**
(iv) Before Purchasing the packaged software on what features the software will be assessed? **(3 Marks)**
- (b) ABC Company is engaged in manufacturing 5 brands of packed snacks. It is having five manufacturing setups, each capable of manufacturing any of its brands, one at a time, The cost to make a brand on these setups vary according to following table:

	S1	S2	S3	S4	S5
B1	4	6	7	5	11
B2	7	3	6	9	5
B3	8	5	4	6	9
B4	9	12	7	11	10
B5	7	5	9	8	11

Assuming, five setups are S1, S2, S3,S4 and S5 and five bands are B1, B2.B3,B4 and B5.

Find the optimum assignment of products on these setups resulting in the minimum cost. **(10 Marks)**

Question 3

- (a) Draw a diagram depicting the flow of information for computerized production scheduling system and explanation the following :
(i) System interfaces.
(ii) Files and inputs.
(iii) Output Reports. **(10 Marks)**
- (b) A super market has a single cashier. During the peak hours, customers arrive at a rate of 20 Customers per hour. The average number of customers that can be processed by the cashier is 24 per hour. Calculated :
(i) The probability that the cashier is idle.
(ii) The average number of customers in the queuing system.

- (iii) The average time a customer spends in the system.
- (iv) The average number of customers in the queue.
- (v) The average time a customer spends in the queue waiting for service. **(10 Marks)**

Question 4

- (a) What measures are to be taken by the top management to protect data and program? also explain the various controls, necessary to ensure data communication security. **(10 Marks)**
- (b) ABC Enterprises is having three plants manufacturing dry cells, located at different locations. Production cost differs from plant to plant. There are five sales offices of the company located in different regions of the country. The sales prices can differ from region to region. The shipping cost from each plant to each sales office and other data are given by the following table:

Production Data Table		
Production cost per unit	Max. capacity in no. of units	Plant no.
20	150	1
22	200	2
18	125	3

Shipping Cost and Demand & Sales Prices Table

Shipping Costs

	Sales Office 1	Sales Office 2	Sales Office 3	Sales Office 4	Sales Office 5
Plant 1	1	1	5	9	4
Plant 2	9	7	8	3	6
Plant 3	4	5	3	2	7

Demand & Sales Prices

Demand	80	100	75	45	125
Sales Price	30	32	31	34	29

Find the production and distribution schedule most profitable to the company.

Question 5

- (a) What are the major reasons for the development of methods standards and performance standards? Discuss them briefly **(10 Marks)**
- (b) A Bakery keeps stock of popular brand of bread. Previous experience indicates indicates the daily demand as given below:

Daily demand	0	10	20	30	40	50
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Consider the following sequence of random numbers: 48, 78, 19, 51, 56, 77, 15, 14, 68, 9.

Using above sequence, simulate the demand for the next 10 days.

- (i) Find out the stock if the owner of the bakery decides to make 30 breads everyday.
- (ii) Estimate the daily average demand for the bread on the basis of simulated data.

Question 6

- (a) Explain briefly the principal duties of a chief systems analyst and a programmer. **(10 Marks)**
- (b) A small assembly plant assembles PCs through 9 interlinked stages according to following precedence/ process:

Stage from to	Duration (Hours)
1-2	4

1-3	12
1-4	10
2-4	8
2-5	6
3-6	8
4-6	10
5-7	10
6-7	0
6-8	8
7-8	10
8-9	6

- i. Draw an arrow diagram (network) representing above assembly work. **(2 Marks)**
- ii. Tabulate earliest start, earliest finish, latest start and latest finish time for all the stages. **(4 Marks)**
- iii. Find the critical path and the assembly duration. **(2 Marks)**
- iv. Tabulate total float, free float and independent float. **(2 Marks)**

Question7

- (a) Write short notes on the following:
 - (i) Editing tests to check the validity of data. **(5 Marks)**
 - (ii) Security risks associated with personal computers. **(5 Marks)**
- (b) Write comparison between:
 - (i) Hurwicz and Wald criterion for decision problems. **(5 Marks)**
 - (ii) PERT and CPM. **(5 Marks)**

**PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
MAY- 1998**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1:

- (a) Explain the concept of MIS in terms of its three elements **(5 Marks)**
- (b) Discuss the potential impact of computers and MIS on different levels of management **(5 Marks)**
- (c) A firm buys castings of P and Q type of parts and sells them as finished product after machining, boring and polishing. The purchasing cost for castings are Rs.3 and Rs.4 each for parts P and Q and selling costs are Rs.8 and Rs. 10 respectively. The per hour capacity of machines used for machining, boring and polishing for two products is given below:

Capacity per hour	Parts	
	P	Q
Machining	30	50
Boring	30	45
Polishing	45	30

The running costs for machines, boring and polishing are Rs.30, Rs.22.5 and Rs.22.5 per hour respectively.

Formulate the linear programming problem to find out the product mix to maximize the profit.

(5 Marks)

Question 2

- (a) What is the 'physical security' of a computer system? Explain, how the security administrator is responsible for balancing the benefits and costs of various security measures? **(10 Marks)**
- (b) A manufacturing company has four zones A, B, C, D and four sales engineering P, Q, R, and S respectively for assignment. Since the zones are not equally rich in sales potential, therefore it is estimated that a particular engineer operating in a particular zone will bring the following sales:

Zone A	4,20,000
Zone B	3,36,000
Zone C	2,94,000
Zone D	4,62,000

The engineers are having different sales ability. Working under the same conditions, their yearly sales are proportional to 14,9,11 and 8 respectively. The criteria of maximum expected total sales is to be met by assigning the best engineer to the richest zone, the next best to the second richest zone and so on.

Find the optimum assignment and the maximum sales.

(10 Marks)

Question 3

- (a) For a material inventory control system, draw the system flow chart. Mark different runs. Explain relevant details and symbols used. **(10 marks)**
- (b) Customers arrive at a one-window drive according to a Poisson distribution with mean of 10 minutes and service time per customer is exponential with mean of 6 minutes. The space in-front of the window can accommodate only three vehicles including the serviced one. Other vehicles have to wait outside this space. Calculate:
- Probability that an arriving customer can drive directly to the space in-front of the window.
 - Probability that an arriving customer will have to wait outside the directed space?
 - How long an arriving customer is expected to wait before getting the services?
- (10 Marks)**

Question 4

- (a) Explain in detail, the five basic control functions of the computer operation department **(10 Marks)**
- (b) The automobile company manufactures around 150 scooters. The daily production varies from 146 to 154 depending upon the availability of raw materials and other working conditions:

Production per day	Probability
146	0.04
147	0.09
148	0.12
149	0.14
150	0.11
151	0.10
152	0.20
153	0.12
154	0.08

The finished scooters are transported in a specially arranged lorry accommodating 150 scooters. Using following random numbers:

80 81 76 75 64 43 18 26 10 12 65 68 69 61 57

Stimulate the process to find out:

- (i) What will be the average number of scooters waiting in the factory?
- (ii) What will be the average number of empty space on the lorry? **(10 Marks)**

Question 5

- (a) What do you understand by system development life cycle? Explain the various activities involved in it? **(5 Marks)**
- (b) Explain different conversion strategies used for conversion from manual to computerized system. Enumerate the advantages and disadvantages of each strategy **(5 Marks)**
- (c) Consider the following data for the transportation problem:

Factory	Destination			Supply to be exhausted
	(1)	(2)	(3)	
A	5	1	7	10
B	6	4	6	80
C	3	2	5	15
Demand	75	20	50	

Since there is not enough supply, some of the demands at the three destinations may not be satisfied. For the unsatisfied demands, let the penalty costs be rupees 1, 2, and 3 for destination (1), (2) and (3) respectively.

Find the optimal allocation that minimizes the transportation and penalty costs **(10 Marks)**

Question 6

- (a) State the various steps involved in establishing the standards for programming personnel. Explain any two methods to compute the time spent by a programmer on each task. **(10 Marks)**
- (b) Write short notes on:
- (i) Decision trees.
- (ii) Limitations of linear programming problem **(5+5=10 Marks)**

Question 7

- (a) Define personnel information system. List its various basic sub-systems and explain them in detail. **(10 Marks)**

(b) The following information is given:

Activity	(1-2)	(2-3)	(2-4)	(3-5)	(4-6)	(5-6)	(5-7)	(6-7)
Pessimistic time (in weeks)	3	9	6	8	8	0	5	8
Most likely time(in weeks)	3	6	4	6	6	0	4	5
Optimistic time (in weeks)	3	3	2	4	4	0	3	2

Draw the network diagram for the above. Calculate:

- Variance to each activity
- Critical path and expected project length
- The probability that the project will be completed in 23 weeks

Given that:

Z value	1.90	1.91	1.92	1.93	1.94
Probability	0.9713	0.9719	0.9726	0.9732	0.9738

(10 Marks)

PAPER : 5 SYSTEMS ANALYSIS, DATA PROCESSING & QUANTITATIVE TECHNIQUES**November 1997**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1

(a)

- i. Name the three approaches used to develop the Management Information System and explain them briefly. **(6 Marks)**
 - ii. Give a list of major “functional information areas” and their sub-systems. **(4 Marks)**
- (b) A firm produces 3 products A, B and C. It uses two types of raw materials I and II of which 5,000 and 7,500 units respectively are available. The raw material requirements per units of the products are given below:

Raw Material	Requirement per unit of product		
	A	B	C
I	3	4	5
II	5	3	5

The labour time for each unit of Product A is twice that of Product B and three times that of Product C. The entire labour force of the firm can produce the equivalent of 3,000 units. The minimum demand of the three products is 600, 650 and 500 units respectively. Also the ratios of the number of units produced must be equal to 2:3:4. Assuming the profits per unit of A, B and C as Rs. 50, 50 and 80 respectively.

Formulate the problem as a linear programming model in order to determine the number of units of each product which will maximize the profit. **(10 Marks)**

Question 2

- (a) What is the program life cycle? Explain the three states on which the program managers are usually involved. **(10 Marks)**
- (b) A particular product is manufactured in factories A, B, C and D and is sold at centers 1, 2 and 3. The cost in Rs. of product per unit and capacity in kgms per unit time of each plant is given below:

Factory	Cost (Rs.) per unit	Capacity (kgms) per unit
A	12	100
B	15	20
C	11	60
D	13	80

The sale Price in Rs. Per unit and the demand in kgms per unit time are as follows:

Sales Centre	Sale Price (Rs.) per unit	Demand (Kgms) per unit
1	15	120
2	14	140
3	16	60

Find the optimal sales distribution.

(10 Marks)**Question 3**

- (a) For the computerized “cost estimation statement”, explain briefly the following:
- a. System Interfaces
 - b. Files and inputs
 - c. Output reports

(10 Marks)

- (b) A firm produces four products. There are four operators who are capable of producing any of these four products. The processing time varies from operator to operator. The firm records 8 hours a day and allows 30 minutes for lunch. The processing time in minutes and the profit for each of the products are give below:

Operators	Products			
	A	B	C	D
1	15	9	10	6
2	10	6	9	6
3	25	15	15	9
4	15	9	10	10
Profit (Rs.) per unit	8	6	5	4

Find the optimal assignment of products to operators.

(10 Marks)

Question 4

- (a) Bring out the suggested rules to be observed in all the phases in Methods Standards for the functions of program testing and documentation. **(10 Marks)**
- (b) A small project is having 7 activities. The relevant data about these activities is given below:

Activity	Dependence	Normal Duration (Days)	Crash Duration (Days)	Normal Cost (Rs.)	Crash Cost (Rs.)
A	-	7	5	500	900
B	A	4	2	400	600
C	A	5	5	500	500
D	A	6	4	800	1000
E	B,C	7	4	700	1000
F	C,D	5	2	800	1400
G	E,F	6	4	800	1600

- Find out the Normal duration and the minimum duration.
- What is the percentage increase in cost to complete the project in 21 days?

(10 Marks)

Question 5

- (a) Write short notes on:
- Roll-Back technique in decision tree.
 - Share accounting

(5 Marks)

(5 Marks)

- (b) Explain the various elements of a queuing system.

(10 Marks)

Question 6

- (a) Explain the two important aspects of financial decision making. Also exhibit the flow of information for financial decision making in the form of a diagram. **(10 Marks)**
- (b) A small maintenance project consists of the following twelve jobs whose precedence relations are identified with their node numbers: **(5 Marks)**

Job (i,j)	(1,2)	(1,3)	(1,4)	(2,3)	(2,5)	(2,6)
Duration (in days)	10	4	6	5	12	9
Job (i,j)	(3,7)	(4,5)	(5,6)	(6,7)	(6,8)	(7,8)
Duration (in days)	12	15	6	5	4	7

- Draw an arrow diagram representing the project.
- Calculate earliest start, earliest finish, latest start and latest finish time for all the jobs.
- Find the critical path and project duration.
- Tabulate total float, free float and independent float.

Question 7

- Explain the four general components of the disaster recovery plan giving the major procedures in each.
- A Company manufactures 30 items per day. The sale of these items depends upon demand which has the following distribution:

Sales (Units)	Probability
27	0.10
28	0.15
29	0.20
30	0.35
31	0.15
32	0.05

The production cost and sale price of each unit are Rs. 40 and Rs. 50 respectively. Any unsold product should be disposed off at a loss of Rs. 15 per unit. There is a penalty of Rs. 5 per unit if the demand is not met.

Using the following random numbers estimate total profit/ loss of the company for the next 10 days: 10, 99, 65, 99, 95, 01, 79, 11, 16, 20.

If the company decides to produce 29 items per day, what is the advantage or disadvantage to the Company?

(2+8 Marks)

**PAPER: 5 SYSTEMS ANALYSIS, DATA PROCESSING & QUANTITATIVE TECHNIQUES
MAY 1997**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1

- (a) What are the factors on which information requirement of executives depend? Explain with relevant examples. **(10 Marks)**
- (b) An agriculturist has a farm with 125 acres. He produces Radish, Muttar and Potato. Whatever he raises is fully sold in the market. He gets Rs.5 for Radish per kg., Rs.4 for Muttar per kg. and Rs.5 for Potato per kg. The average yield is 1,500 kg. of Radish per acre, 1,800 kg. of Muttar per acre and 1,200 kg. of Potato per acre. To produce each 100 kg. of Radish and Muttar and to produce each 80 kg. of Potato, a sum of Rs.12.50 has to be used for manure. Labour required for each acre to raise the crop is 6 man days for Radish and Potato each and 5 man days for Muttar. A total of 500 man days of labour at a rate of Rs.40 per man day are available. **(10 Marks)**

Question 2

- (a) Discuss with examples, the commonly used coding schemes for data processing. **(10 Marks)**
- (b) XYZ airline operating 7 days a week has given the following time-table. Crews must have a minimum layover of 5 hours between flights. Obtain the pairing flights that minimizes layover time away from home. For any given pairing the crew will be based at the city that results in the smaller layover:

Chennai – Mumbai			Mumbai - Chennai		
Flight No	Depart.	Arrive	Flight No	Depart.	Arrive
A1	6 A.M.	8 A.M.	B1	8 A.M.	10 A.M.
A2	8 A.M.	10 A.M.	B2	9 A.M.	11 A.M.
A3	2 P.M.	4 P.M.	B3	2 P.M.	4 P.M.
A4	8 P.M.	10 P.M.	B4	7 P.M.	9 P.M.

(10 Marks)

Question 3

- (a) List the sequence of events which occur immediately in the sales order entry computer program in the on-line, real-time system. **(10 Marks)**
- (b) Define a project and briefly explain the four common implications which characterize a project, and state the five steps that the five steps of the working methodology of critical path analysis. **(10 Marks)**

Question 4

- (a) Explain all the five basic control functions of the operation department in operating standards. **(10 Marks)**
- (b) A company has four terminals U, V, W and X. At the start of a particular day 10,4,6 and 5 trailers respectively are available at these terminals. During the previous night 13,10,6 and 6 trailers respectively were loaded respectively has come up with the costs between the terminals and plants as follows:

		Plants			
		A	B	C	D
Terminals	U	20	36	10	28
	V	40	20	45	20
	W	75	35	45	50
	X	30	35	40	25

Find the allocation of loaded trailers from plants to terminals in order to minimize transportation cost.

(10 Marks)

Question 5

- (a) Explain the main requirements and techniques of input controls of data. **(10 Marks)**
- (b) Write short notes on the following:
- Resource Smoothing.
 - Monte Carlo Simulation. **(5+5 Marks)**

Question 6

- (a) List the advantages and disadvantages of leasing computers from a third party leaser. **(10 Marks)**
- (b) A businessman has an option of selling a product either in domestic market or in export market. The available relevant data are given below:

Items	For Export Market	For Domestic Market
Probability of selling	0.6	1.0
Probability of keeping delivery schedule	0.8	0.9
Penalty for not meeting delivery schedule (Rs.)	50,000	10,000
Selling price(Rs.)	9,00,000	8,00,000
Cost of third party inspection(Rs.)	30,000	Nil
Probability of collection of sale amount	0.8	0.9

If the product is not sold in foreign market, it can always be sold in domestic market. There are no other implications like interest and time.

- Draw the decision tree using the data given above.
- Should the businessman go for selling the product in the foreign market? Justify your answer. **(5+5 Marks)**

Question 7

- (a) Briefly discuss with examples the five program design tools available today. **(10 Marks)**
- (b) The following payoff table is given:

Action	Event			
	E1	E2	E3	E4
A1	40	200	-200	100
A2	200	0	200	0
A3	2	100	0	150
A4	-50	400	100	0

- Calculate the opportunity loss table.
- Suppose that the probabilities of the events of this table are $P(E1) = 0.20$, $P(E2) = 0.15$, $P(E3) = 0.40$, $P(E4) = 0.25$, calculate the expected payoff and the expected loss of each action.

(2+8 Marks)