

PAPER – 6 : INFORMATION TECHNOLOGY

Question No. 1 is compulsory.

Answer any **four** from the rest.

Question 1

(a) Convert the following from one number system to another number system alongwith the working notes:

- (i) $(43.375)_{10}$ = $(\dots\dots\dots)_2$
- (ii) $(243)_8$ = $(\dots\dots\dots)_{16}$
- (iii) $(7B.773)_{16}$ = $(\dots\dots\dots)_{10}$
- (iv) $(163)_{10}$ = $(\dots\dots\dots)_8$
- (v) $(1000001.1010011)_2$ = $(\dots\dots\dots)_{10}$ (1×5=5 Marks)

(b) Describe briefly, the following terms with reference to Information Technology:

- (i) ASCII
- (ii) Access Time
- (iii) Extranet
- (iv) Repeater
- (v) Overlaying (1×5=5 Marks)

(c) Give one or more reasons of use for each of the following:

- (i) RS-232C Port
- (ii) Circuit Switching
- (iii) Address Bus
- (iv) Cache memory in a processor
- (v) Digital Signature (1×5=5 Marks)

(d) Write True or False for each of the following:

- (i) Flash memory is a volatile memory.
- (ii) Data bus is a mechanical device that connects CPU and other hardware devices on the motherboard.
- (iii) An object program is a machine language program that can be directly executed by a particular computer.
- (iv) MS-Windows is a multiprogramming and multitasking operating system.
- (v) More RAM can make the computer run faster. (1×5=5 Marks)

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Answer

(a) (i) $(43.375)_{10} = (\quad)_2$

For the Integral Part

2	43	Remainder
2	21	1
2	10	1
2	5	0
2	2	1
2	1	0
	0	1

$= (101011)_{10}$

Now, for the Fractional Part

$0.375 \times 2 = \underline{0}.750$

$0.750 \times 2 = \underline{1}.50$

$0.50 \times 2 = \underline{1}.00$

$= (.011)_{10}$

$(43.375)_{10} = (101011.011)_2$

(ii) $(243)_8 = (\quad)_{16}$

To convert the given number from Octal number system to Hexadecimal number system, each digit of the number will be represented in Hexadecimal form using a group of 4 digits.

$$\begin{aligned}
 (243)_8 &= \quad 010 \quad 100 \quad 011 \\
 &= \quad 0000 \quad 1010 \quad 0011 \\
 &= \quad 0 \quad A \quad 3
 \end{aligned}$$

So, the Hexadecimal form of $(243)_8$ is as follows :

$(243)_8 = (A3)_{16}$

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(iii) $(7B.773)_{16} = (\quad)_{10}$

For the Integral Part

$$\begin{aligned} 7B &= 7 \times 16 + 11 \times 16^0 \\ &= 112 + 11 \times 1 \\ &= (123)_{10} \end{aligned}$$

Now, for the Fractional Part

$$\begin{aligned} &= .773 \\ &= 7 \times 16^{-1} + 7 \times 16^{-2} + 3 \times 16^{-3} \\ &= 7/16 + 7/256 + 3/(256 \times 16) \\ &= 0.4375 + .02734375 + .000732421875 \\ &= (.465576)_{10} \end{aligned}$$

Hence, $(7B.773)_{16} = (123.465576)_{10} \cong (123.465)_{10}$

(iv) $(163)_{10} = (\quad)_8$

8	163	Remainder
8	20	3
8	2	4
	0	2

Hence, $(163)_{10} = (243)_8$

(v) $(1000001.1010011)_2 = (\quad)_{10}$

For the Integral Part

$$\begin{aligned} (1000001)_2 &= 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 \\ &= 64 + 0 + 0 + 0 + 0 + 0 + 1 \\ &= (65)_{10} \end{aligned}$$

Now, for the Fractional Part

$$\begin{aligned} (.1010011)_2 &= 1 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3} + 0 \times 2^{-4} + 0 \times 2^{-5} + 1 \times 2^{-6} + 1 \times 2^{-7} \\ &= \frac{1}{2} + 0 + \frac{1}{8} + 0 + 0 + \frac{1}{64} + \frac{1}{128} \\ &= 0.5 + 0.125 + 0.015625 + 0.0078125 \\ &= (.6484375)_{10} \end{aligned}$$

$(1000001.1010011)_2 = (65.6484375)_{10}$

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- (b) (i) **ASCII:** It stands for American Standard Code for Information Interchange. It is used to represent data in memory. It is a 7 bit code, which uses the right most seven bits of the 8 bits to represent numbers, letters and special characters.
- (ii) **Access Time:** It refers to the time interval between the instant when a computer or control unit calls for transfer of data to or from a storage device and the instant when its operation is completed. Thus, access time is the sum of the waiting time and transfer time.
- (iii) **Extranet:** It is an extension of an Intranet that makes the latter accessible to outside companies or individuals with or without an Intranet. It is also defined as a collaborative Internet connection with other companies and business partners. Parts of an Intranet are made available to customers or business partners for specific applications. The Extranet is thus an extended Intranet, which isolates business communication from the Internet through secure solutions. Extranet provides privacy and security of an Intranet while retaining the global reach.
- (iv) **Repeater:** It is an electronic device which is used to amplify the communication signals before transferring the same to next section of cables and thus helps in solving the problem arising due to signal degradation.
- (v) **Overlaying:** Updating of Master file on the basis of transaction file takes place with the help of a technique known as overlaying. In this technique, original master file is overwritten by updated master record.

Or

Overlaying refers to a technique used to transfer segments of program from auxiliary storage into internal storage for execution, so that two or more segments occupy the same storage locations at different times.

- (c) (i) **Use of RS-232C Port:** It is a 25 pin port which transfers one bit of data at a time. It is used to connect mouse, printer and external MODEM.
- (ii) **Use of Circuit Switching:** It establishes a fixed bandwidth circuit that allows communication equipments and circuits to be shared among users. Each user has sole access to circuit (functionally equivalent to a pair of copper wires) during network use.
- (iii) **Use of Address Bus:** Address Bus is a set of wires that connects the CPU and RAM. It carries the memory addresses. The number of wires in the bus determines the maximum number of memory addresses.
- (iv) **Use of Cache Memory in a Processor:** It acts as a temporary memory that boosts the processing power of the computer system significantly. This memory is fast as compared to RAM i.e. it takes less time to access the data from Cache memory as compared to RAM. Cache memory of CPU is called L1 cache (Primary cache). L1

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cache is divided into two parts – one for storage of data and another for storage of program instructions.

- (v) **Digital Signature:** It is used for authentication of an electronic record by a person with electronic method according to the provisions of Section 3 of IT Act 2000 and thus gives legal recognition to the transactions carried out by means of EDI and E-Commerce.
- (d) (i) **False**
(ii) **False**
(iii) **True**
(iv) **True**
(v) **True**

Question 2

Distinguish between the following :

- (i) *CMOS and BIOS*
(ii) *Dumb terminal and Intelligent terminal*
(iii) *Batch processing and Interactive processing*
(iv) *Synchronous transmission and Asynchronous transmission*
(v) *Black box approach of audit and White box approach of audit.* (4×5=20 Marks)

Answer

- (i) **CMOS and BIOS:** CMOS (Complementary Metal Oxide Semiconductor) is a battery-powered, non-volatile memory chip .CMOS memory is used to store the date, time and system setup parameters. These parameters are loaded every time the computer is started. This is done by the BIOS.

BIOS stands for Basic Input Output System. BIOS is the boot firmware program which controls the computer from the time we start it up until the Operating System takes over. It is a small chip on the motherboard that loads the hardware settings required to load various devices like keyboards, monitor, or disk drives. The BIOS also manages data flow between the computer's operating system and attached devices such as the hard disk, video card, keyboard, mouse, and printer.

A small Lithium Ion battery located on the motherboard powers the CMOS as well as BIOS.

- (ii) **Dumb Terminal and Intelligent Terminal**

S.No	Dumb Terminal	Intelligent Terminal
1	This terminal consists of Input device for data entry and Output device for obtaining the results but has no processing capability.	This terminal consists of a small processor in addition to I/O devices and has in-built processing capability.

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2	The entire data is processed by central host computer; therefore central host computer must be mini or mainframe computer.	The processor of this terminal can process the data up to certain level, however main processing is done by central host computer.
3	The complete workload is on the main CPU.	There is less workload on the main CPU.
4	The waiting time of the users is more as data processing takes more time.	The waiting time of users is less as data processing takes less time.
5	This terminal is less costly.	This terminal is more costly.
6	These terminals are used in centralized processing.	These terminals are used in distributed processing.
7	The Failure of central host computer will halt the working of dumb terminals.	The failure of central host computer will not completely stop the working of intelligent terminals.

(iii) Batch Processing and Interactive Processing

S.No	<i>Batch Processing/Off-line Processing</i>	<i>Interactive Processing/Online Processing</i>
1	In this type of processing, transactions are accumulated in a batch and then submitted to the computer for processing.	In this case, as soon as transaction occurs, it is entered into the computer for processing.
2	There is time lag between the entry of transactions into the computer and reflections of their effect in data files.	There is no time lag between entry of data and updating of related files.
3	Response is not immediate and user has to wait for a long time to get the results.	Response is immediate and user has not to wait for the results.
4	Magnetic tape is used as a storage media which is cheapest storage media.	Magnetic disk is used as a storage media
5	Sequential file organization is used in this type of processing.	Direct file organization is used in this processing.
6	It requires simple programming, hence programming cost is less.	It requires complex programming, hence programming cost is high.
7	Record count, Financial total, Hash total and Batch total are various terms related to Batch processing.	No such terms exist in this processing.

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8	Cost per transaction processing is less; hence this processing is cost efficient.	Cost per transaction processing is high but results are obtained immediately; hence this processing is effective.
9	Payroll system and Accounting Information System (AIS) are examples of Batch Processing.	Inventory control system, Banking system, Railway/Airlines Reservation system are examples of Interactive processing.

- (iv) **Synchronous Transmission and Asynchronous Transmission:** In ***Synchronous transmission***, the bits are transmitted at fixed rate. The transmitter and the receiver use the same clock signals for synchronization. It allows characters to be sent down the line without start-stop bits. The transmission of data is sent as a multi-word blocks. It uses a group of synchronization bits, which is placed at the beginning and at the end of each block to maintain synchronization. The modem determines the timing of transmission of data. The data transmission is faster, large amount of data is transmitted per second. However, it is very expensive.

In ***Asynchronous transmission***, each data word is accompanied by start (1) and stop (0) bits that identify the beginning and ending of the word. It is a reliable transmission system as the extra start and stop bits ensure that the sender and receiver remain in step with one another. It does not require smart device to differentiate between actual data and start/stop bit. The transmission speed is slowed down where there is a huge volume of information to be transmitted.

- (v) **Black Box Approach of Audit and White Box Approach of Audit**

S.No	Black Box Approach of Audit (Audit around the computer)	White Box Approach of Audit (Audit through the computer)
1	This approach is used when source documents are available in human readable form.	This approach is used when source documents are available in machine readable form and hard copy of the same is not available for audit.
2	In this approach, Auditor audits in the same manner, as is done in a non-computerized environment.	In this approach, auditor checks the various operations being performed in the computer to verify the accuracy of output.
3	This approach is used when audit trail of data is possible i.e. sufficient details are available to verify how input data has been converted to output results or vice versa.	This approach is used when audit trail of data is missing.
4	Auditor is not required to have computer knowledge.	Auditor must have computer knowledge.

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5	Auditor considers the computer as a black box which is doing nothing. It is treated just as a record keeping machine.	Auditor checks the working of programs used in the computer for generating output so that accuracy of the results may be verified.
6	This approach is used when computer does not perform any operation on the data and computer software is developed only to convert the manual operations to computerized form for faster accessing of results whenever required.	This approach is used when computer perform many operations internally like calculation of discount, interest etc. and details of the same are not available in the shape of hard copy. Therefore, it becomes necessary for the auditor to check the working of programs used in the client's computer.
7	This approach is used when the documents are easy to locate for auditing purpose.	This approach of audit is used when documents are not easy to locate for audit.
8	Auditor ensures the implementation of proper error detection & correction procedures, security procedures to protect the data from unauthorized access, possible frauds and use of proper recovery procedures in case of accidental corruption of data.	In this approach, Auditor also makes sure that proper error detection & correction procedures, security procedures to protect the data from unauthorized access & possible frauds and recovery procedures in case of accidental corruption of data are being used in the client's system.

Question 3

- (a) What is meant by the 'Direct Access File Organization'? Describe the "Direct Sequential Access" method.
- (b) What is Decision Support System? Explain various components of Decision Support System.
- (c) A book publisher of Accounts and Computer books offers discount to customers on the basis of Customer type and Subject as detailed below:

Customer type	Subject	Discount (%)
Book seller	Accounts	10
	Computer	20
Library	Accounts	5
	Computer	10

If number of copies purchased is more than 10, then additional discount of 2% is allowed irrespective of the customer type and subject.

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It is also assumed that there are 25 customers and complete details of each customer like customer name, type, subject, number of copies and unit price is required to be entered through the console.

Draw a program flow chart to calculate and print the net amount paid by each customer along with customer name. Also print the total discount allowed to all the customers. (5 + 5 + 10 = 20 Marks)

Answer

(a) **Direct access file organization** allows immediate direct access to individual records on the file. The most widely used direct access techniques are:

1. Direct Sequential Access
 - Self (Direct) Addressing method
 - Index Sequential Addressing Method
2. Random Access
 - Address Generation Method
 - Index Random method

The primary storage in a CPU provides for the direct access. There are some devices outside the CPU that can also provide for direct access feature. The direct access storage devices (such as disc) have the capability of directly reaching to any location.

Direct Sequential Access Method

Self (Direct) Addressing: A record key is used as its relative address. Address of the record can be computed directly from the record key and the physical address of the first record in the file. This method is suitable for determining the bucket address of fixed length records in a sequential file, in which the keys are from a complete or almost complete range of consecutive numbers.

Index Sequential Addressing Method (ISAM): This is hybrid between sequential and direct access file organizations. The records are stored sequentially but direct access to individual records is possible through an index, for example Book library.

To locate a record, the cylinder index is first searched to find the cylinder address, and then the track index for the cylinder is searched to locate the track address of the desired record.

The advantage of ISAM is that the organization permits both sequential as well as random access. For the former, the index is not put in use.

The disadvantage of ISAM is that the extra storage is required to accommodate any subsequent index or any subsequent insertion. Extra time is needed to process the indexes and it needs to periodically reorder the file.

(b) **Decision Support System:** These are information processing systems which help the managers in decision making process. Advancement in hardware technology, interactive computing design, graphics capabilities and programming languages have helped in the development of decision support systems. These systems support management

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decision making process by solving relatively unstructured problems. A friendly computer interface eases the communication between the user and the decision support system.

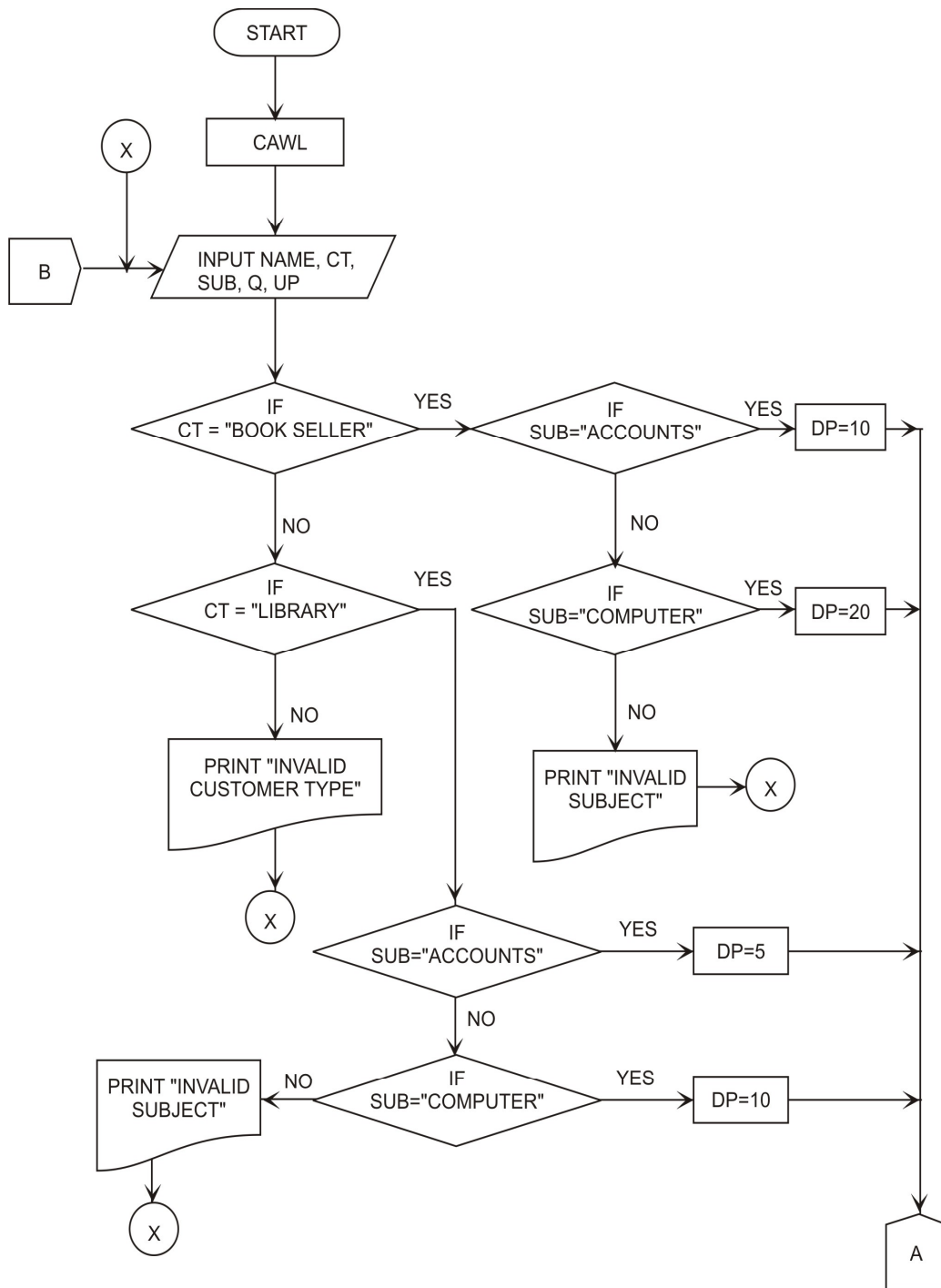
A decision support system has four basic components – (i) the user, (ii) one or more databases, (iii) a planning language, and (iv) the model base. These are briefly discussed below:

- (i) **The user:** The user of a decision support system is usually a manager with an unstructured or semi-structured problem to solve. The manager may be at any level of authority in the organization (e.g., either top management or operating management). Typically, users do not need a computer background to use a decision support system for problem solving. The most important knowledge is a thorough understanding of the problem and the factors to be considered in finding a solution. A user does not need extensive education in computer programming since he has to concentrate on what should be accomplished rather than on how the computer should perform each step.
- (ii) **Databases:** Decision support systems include one or more databases. These databases contain both routine and non-routine data from both internal and external sources. The data from external sources include data about the operating environment surrounding an organization – for example, data about economic conditions, market demand for the organization's goods or services, and industry competition.

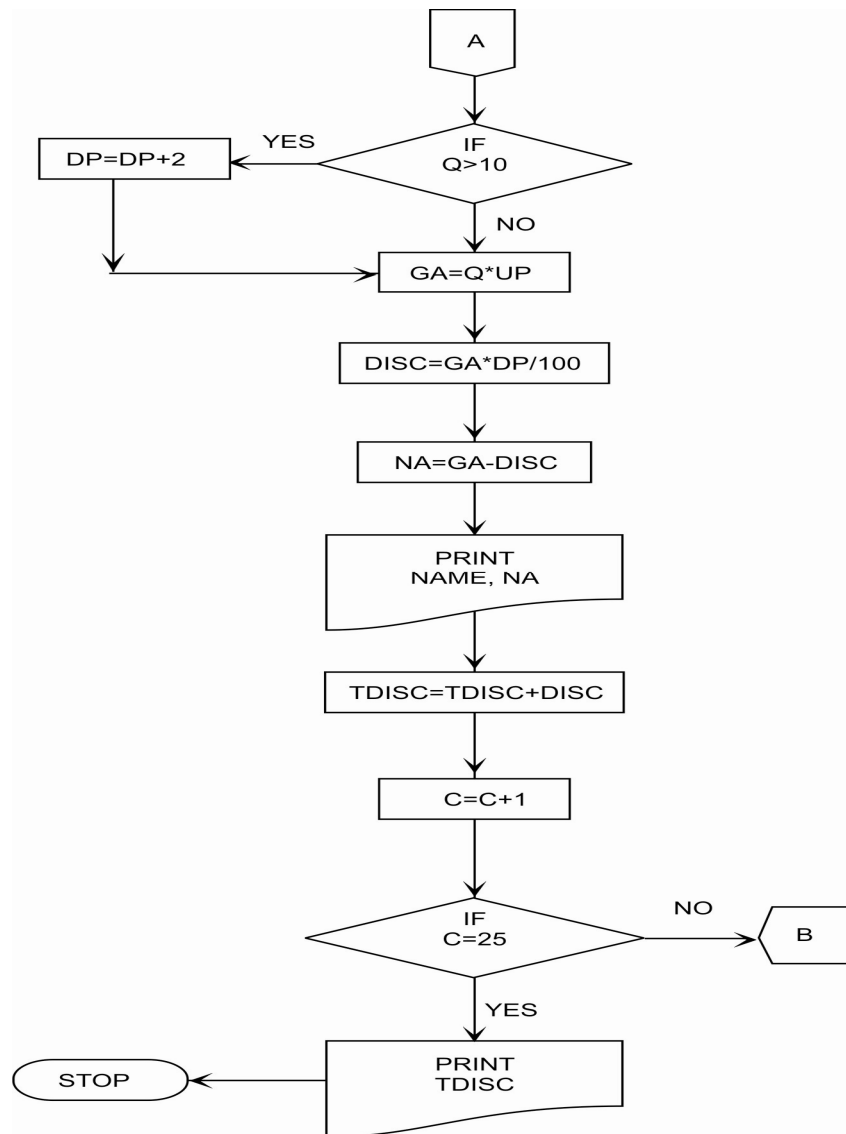
Decision support system users may construct additional databases themselves. Some of the data may come from internal sources. An organization often generates this type of data in the normal course of operations. The database may also capture data from other subsystems such as marketing, production, and personnel.
- (iii) **Planning languages:** Two types of planning languages that are commonly used in decision support systems are: (1) general –purpose planning languages and (2) special-purpose planning languages. General-purpose planning languages e.g. languages in most electronic spreadsheets allow users to perform many routine tasks such as retrieving various data from a database or performing statistical analyses. Special-purpose planning languages are more limited in what they can do, but they usually do certain jobs better than the general-purpose planning languages. Some statistical languages, such as SAS, SPSS, and Minitab are examples of special purpose planning languages.
- (iv) **Model base:** The planning language in a decision support system allows the user to maintain a dialogue with the model base. The model base is the “brain” of the decision support system because it performs data manipulations and computations with the data provided to it by the user and the database. The analysis provided by the routines in the model base is the key to supporting the user's decision. The model base may dictate the type of data included in the database and the type of data provided by the user. Even where the quantitative analysis is simple, a system that requires users to concentrate on certain kinds of data can improve the effectiveness of decision making.

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(c) The Flow chart is given below:



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Abbreviations:-

- CAWL - Clear All Working Locations
- CT - Customer Type
- SUB - Subject
- Q - Quantity
- DP - Discount Payable
- UP - Unit Price
- GA - Gross Amount
- NA - Net Amount
- DISC - Discount
- TDISC - Total Discount

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Question 4

- (a) Describe 'Mesh Network' as a network topology. Also mention its advantages and disadvantages.
- (b) Explain various security mechanisms to protect the information from intrusion and misuse.
- (c) What is Document imaging? Explain various steps required for document imaging along with its advantages. (5 + 5 + 10 = 20 Marks)

Answer

- (a) **Mesh Network** : In this network topology there is random connection of nodes using communication links. These network links are expensive to install and maintain. A mesh network may be fully connected or connected with only partial links. In fully interconnected topology, each node is connected by a dedicated point-to-point link to every node. Thus there is no need of any routing function. The reliability is very high as there is always an alternate path available. Again, because of cost factor these networks are not very common. Only military installations, which need high degree of redundancy, may have such networks, that too with a smaller number of nodes. Partially connected mesh topology is the general topology for WAN where computer nodes are widely scattered. The function of routing information from one node to another is done using routing protocol or procedure.

Advantages:

- (i) It yields the greatest amount of redundancy in the event that one of the nodes fail and where network traffic can be redirected to another node.
- (ii) Network problems are easier to diagnose.

Disadvantages

The cost of installation and maintenance is high as more cable is required than any other configuration.

- (b) The various security mechanisms to protect the information from intrusion and misuse are briefly discussed below:
 - (i) **Firewalls**: It is a system that implements access control between two networks. Organizations make use of firewall to protect their Intranet from outside intruders. Firewall allows only authorized traffic to pass between organization Intranet and outside network, as specified by formal security policy. It authenticates an outside user of the network, verifies his level of access and then directs the user to the required program / data or service.
 - (ii) **Encryption**: It allows information to transmit over the Internet while being protected

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from interception by eavesdroppers. Before the transmission of data on telephone line like transfer of credit card number during E-Commerce transactions, data is encrypted so that no person can trap the data on the way. Encryption of data can be performed with the help of hardware and software. Hardware encryption is used to exchange information among branch offices. The devices which are used for hardware encryption can ensure that all traffic between these offices is secure. Software encryption is employed in conjunction with specific application.

- (iii) **Message Authentication:** Before providing access of data to the user, authentication of user can be done with the help of passwords. It makes sure that message is really from whom it purports to be and that it has not been tampered with. Organization server may also be configured to accept the message only from the known persons.
 - (iv) **Site blocking:** It is a software based approach which restricts the users to access certain sites that are deemed inappropriate by management. For example, in certain organizations, servers are configured using Proxy Server software in such a manner so that user can not open resume posting sites like Naukri.com, Jobsahead.com etc.
 - (v) **log :** In addition to blocking sits, companies can also log activities and determine the amount of time spent on the internet and identify the sits visited.
- (c) Document imaging is the process of entering an image, graph, design, drawing or photograph into the computer with the help of digitizing. Digitizing is a process of converting the graphical information into digital form. Document (Image) processing is a step towards paperless office. There are five steps required for document imaging:
- (i) **Data Capture:** Paper documents are entered into the computer with the help of image scanner. Image scanner converts the graphical information into digital form. There are two types of scanners:-
 - (a) **Page Scanner:** This scanner is used to scan the large images by placing the document on a flat surface and giving the command with the help of scanner software using computer.
 - (b) **Hand held scanner:** This scanner is used to scan small images by holding the scanner in hand and moving the scanner on the document.
 - (ii) **Indexing:** For faster retrieval of stored documents, scanned images are indexed on the basis of some criteria like vendor code number or purchase order number.
 - (iii) **Storage:** Scanned document files are stored on auxiliary storage media for future reference. Since size of the scanned files is more, therefore, compact disk (CD's) or DVD's are used as storage media.
 - (iv) **Retrieval:** Document management software allows the user to access any required

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information from the stored files on the basis of various parameters like indexed key, keyword etc. The software can automatically mark the optical disks (CD's) so that when any information is required to be accessed, then software may tell the number of the CD storing the desired information.

- (v) **Output:** Hard copy of the scanned documents or replica of the original document can be printed with the help of printers and even can be sent to another person through E-Mail.

Advantages of Document Imaging/Image processing are as follows :

- (i) **Accessibility:-** Scanned documents can be accessed by many users simultaneously from different remote locations.
- (ii) **Accuracy:-** The process of digitization of documents reduces the chances of errors due to direct data entry.
- (iii) **Availability:-** Manual documents may not be available timely but documents stored into the computer can easily be searched.
- (iv) **Capacity:-** Manual documents take lot of storage space but vast amount of data can be stored into the computer.
- (v) **Cost:-** Cost of handling manual documents is much more as compared to scanned documents.
- (vi) **Customer satisfaction:-** Providing fast response to the users results in customer satisfaction.
- (vii) **Security:-** Security of the stored data can be implemented with the help of passwords and even confidential documents can be hidden from ordinary users.
- (viii) **Speed:-** Stored documents can be retrieved quickly with the help of indexing.
- (ix) **Versatility:-** Image processing allows the user to scan hand written documents which can be opened in word processing software for editing.

Question 5

- (a) *Explain various data integrity controls, which are used in a database environment to ensure the accuracy and completeness of data.*
- (b) *Write the various steps for creating a new macro in MS-Excel.*
- (c) *Power Point 2000 offers different views to help you to create your presentations. Describe them briefly.*

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(d) Define the following functions used in MS-Excel:

- (i) ROUND
- (ii) LEN
- (iii) DCOUNT
- (iv) DB
- (v) LOWER

(5 + 5 + 5 + 5 = 20 Marks)

Answer

(a) Various data integrity controls are briefly discussed below:

- (i) **Field data type (Numeric/Character/Date) Check:-** The data type defines the type of data to be entered in the field. It may be numeric, character etc. The length of the data field defines the maximum number of characters or digits to be entered in the data field. If the field has been defined as numeric, then user cannot enter character/date value.
- (ii) **Default Value :-** It is the value which a field assumes, until it is changed by the user. Default value increases the speed of data entry because it automatically appears for the field and user simply presses the enter key, if he does not want to change the value. Default value also reduces the chances of errors.
- (iii) **Range Control:-** Range control defines the allowed range for a particular field. A range may be a numeric lower to upper bound or a set of specific values. If user enters the value outside this range, then it is not accepted by the computer. For example, specified range for the 'Basic' field may be a value between Rs.1000 and Rs.20000/-. If user enters the Basic pay more than 20000, then it is not accepted.
- (iv) **Null Value Control:-** Null value means empty value. Primary key of the record can not have null value. In addition to primary key, null value control can also be implemented on any other field. For example, in Item master file, if Item Code is specified but Item Name is left blank, then blank Item Name may not be accepted by computer, if null value control is specified on Item Name field.
- (v) **Referential Integrity:-** It allows the entry of a field value in a particular field only when that field value exists in the other data base file. For example, we can enter only that Supplier Code in Item master file whose record exists in Supplier master file.

(b) Steps for creating a new macro in MS-EXCEL

- (i) Select "Tools/Macro" option from the menu.
- (ii) Select "Record New Macro" option from the cascading menu. It would display 'Record Macro' dialog box.
- (iii) Name the macro to save it. A macro can be assigned a name in the 'Macro Name' box.

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- (iv) After assigning a name, give a keyboard shortcut to it, which is absolutely at the discretion of the user. Such a shortcut is assigned only if the user wishes to execute the macro using a keyboard.
- (v) Next proceed to 'Store Macro' in box. The macro can be stored in the current workbook or other workbook by selecting from the drop-down list 'This workbook' or 'New workbook' respectively
- (vi) In the 'Description box' relevant detail / notes about the macro like recording date, owner of macro, purpose of macro, etc. can be put. Any kind of the descriptive text can be given in this box.
- (vii) When all the relevant details are put in the 'Record Macro' dialog box, click OK button. A small 'Stop Recording' tool bar will appear on the screen.
- (viii) Now proceed to record the macro. Just perform all the essential steps to complete the specified task.
- (ix) The macro is now ready to be executed. Click at the 'Stop Recording' button when all the necessary steps being included in the macro are over.

If the macro is made available only in the current workbook and it is needed for some other workbook, then choose 'New Workbook' option in the 'Record Macro' dialog box. When asked for the name, provide name of the new workbook where in the macro is to be saved.

(c) *Different Views offered by Power Point 2000 are briefly enumerated below :*

- (i) **Normal View** : Normal view is a tri-pane view which offers the slide view, the outline view and the notes pane. It gives small pane for text. It allows the user to frequently switch between text and objects on the slide. This view allows editing text both on the slide and the outline view.
- (ii) **Outline View** : The standard and formatting toolbars are available for editing text. The slide is visible only in miniatures form. It gives largest pane for text. Hence, it is easy to work on a presentation.
- (iii) **Slide View** : It makes convenient to insert objects and modify them. This view shows how the text and objects appear together on each slide. With this view choice, user can work only on one slide at a time. The user can edit the text on each slide in the slide view.
- (iv) **Slide Sorter View** : It helps in moving the slides around, but text / objects cannot be rearranged on individual slides. This view shows all the slides at one time.
- (v) **Slide Show View** : It shows all the slides one by one automatically if the time of each slide has been set up. Alternatively the slides can be viewed one by one on mouse click.

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- (d) (i) **ROUND(x,n)** : It is a Mathematical function of MS-EXCEL which is used to round off the number x to n number of decimal places. For example, if x=2.1752 and n=2 then ROUND(x,n) will return 2.18.
- (ii) **LEN(text string)** : It is a Text function of MS-EXCEL which returns the number of characters in the text string. For example, if text string = 'Examination', then this function will return 11.
- (iii) **DCOUNT(database, field, criteria)**: It is a Database function of MS-EXCEL which is used to count the number of cells containing numbers in the field (column) of records in the database that match the conditions specified.
- (iv) **DB(cost,salvage,life,period,month)** : It is a Financial function of MS-EXCEL which is used to calculate the depreciation of an asset for a specified period using the fixed-declining balance method.
- Where,
- Cost*: Initial cost of the asset
- Salvage*: Salvage value at the end of the life of asset
- Life*: Useful life of asset or no. of periods over which the assets is being depreciated.
- Period*: Period for which depreciation is to be calculated. Period must use the same units as life.
- Month*: No. of months in the first year. Default value is 12
- (v) **LOWER (text string)**: It is a Text function of MS-EXCEL which converts all uppercase letters in a text string to lowercase letters e.g. if the text string is 'EXAM', then this function will return 'exam'.

Question 6

- (a) *What are the conditions prescribed in IT Act, 2000 for the purpose of Electronic Governance to retain documents, records or information in electronic form for any specified period?*
- (b) *Explain the following miscellaneous techniques of audit in a computerized environment :*
- (i) *System Activity file interrogation*
- (ii) *Program Comparison*
- (c) *Explain salient features of E.X. NGN Financial Accounting package.*
- (d) *Explain Local Area Network (LAN) and its basic components. (5 + 5 + 5 + 5 = 20 Marks)*

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Answer

- (a) Section 7 of chapter III of IT Act, 2000 provides that the documents, records or information which has to be retained for any specified period shall be deemed to have been retained if the same is retained in the electronic form provided the following conditions are satisfied.

- (i) The information therein remains accessible so as to be usable subsequently.
- (ii) The electronic record is retained in its original format or in a format which accurately represents the information contained.
- (iii) The details which will facilitate the identification of origin, destination, dates and time of dispatch or receipt of such electronic record are available therein.

This section does not apply to any information which is automatically generated solely for the purpose of enabling an electronic record to be dispatched or received. Moreover, this section does not apply to any law that expressly provides for the retention of documents, records or information in the form of electronic records.

- (b) (i) **System Activity File Interrogation:-** Many computer operating systems automatically create a log file, listing all the exceptional events occurring in the system. This log file is stored on hard disk and review of this file helps in identification of exceptional events as listed below:-

- a) The use of utility program instead of application program to change the data file.
- b) Attempt to break password to gain access to the system.
- c) The running of an application program without normal sequence.
- d) Change in application programs.

- (ii) **Program Comparison:-** This tool compares two different versions of the same program to check that they are identical. Software is available to do this comparison on source code as well as on object code. This tool can be used in the following situations:-

- a) Comparing the program actually implemented with the one tested and accepted by user.
- b) Comparing the programs installed at different locations.
- c) Comparing the presently installed version with a copy of previously tested version under the control of the auditor.

Any difference between the two copies of program will require programming skill to know the impact of changes on the output.

- (c) The salient features of E.X. NGN accounting package are:-

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- (i) **Easy-to-use graphical user interface:-** It is a user friendly accounting package which is based on GUI and is easy to use.
 - (ii) **Context sensitive help as per Windows :-** Right mouse click at any point will provide on-line help as provided in Window .
 - (iii) **Multitasking:-** This accounting package allows the user to print lengthy ledger along with invoices entry.
 - (iv) **Security at the individual activity level:-** Different passwords can be set for different reports to avoid the unauthorized access of these reports.
 - (v) **Reports:-** This package offers 72 basic reports in accounting having different formats and prepared on different parameters.
 - (vi) **Data Import/Export:-** User can export E.X.-NGN data to MS-Excel or MS-Access for further analysis.
 - (vii) **Bank Reconciliation:-** This package provides reconciliation of bank balances with bank statements and can adjust the difference in Income/Expense account.
 - (viii) **Analysis Parameters:-** E.X.-NGN accounting package allows the user to perform analysis of stored data on the basis of various parameters like on selected items, accounts, turnover, period etc.
- (d) Computer network is a collection of computers and technical devices connected together by a communication system. A local area network (LAN) is primarily a data transmission system intended to link computers and associated devices within a restricted geographical area such as an office building or several adjacent buildings. The linked computers and related equipments may be anything from full-scale mainframe computing systems to small desktop office workstations, terminals and peripherals etc. The key characteristic of a local area network is the fact that the whole of the network, confined to one site, is completely under the control of one organization. Organizations use LANs because they enable multiple users to share software, data and devices. LANs use a shared physical media, which is routed in the whole campus to connect various systems. LAN uses high-speed media (1Mbps to 30 Mbps or more) and are mostly privately owned and operated.

Local area network has following five components:

- (i) **File Server:** A network file server is a computer system used for the purpose of managing the file system, servicing the network printers, handling network communications, and other functions. A server may be dedicated in which case all of its processing power is allocated to network functions, or it may be non-dedicated which means that a part of the server's functions may be allocated as a workstation or DOS-based system.

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- (ii) **The network operating system:** It is loaded into the server's hard disk along with the system management tools and user utilities. When the system is restarted, NetWare boots and the server comes under its control.
- (iii) **Workstations:** Workstations are attached to the server through the network interface card and the cabling. Workstations are normally intelligent systems, such as the IBM PC. The concept of distributed processing relies on the fact that personal computers attached to the networks perform their own processing after loading programs and data from the server. Hence, a workstation is called an Active Device on the network. After processing, files are stored back on the server where they can be used by other workstations.
- (iv) **Network interface card:** Every device connected to a LAN needs a Network interface card (NIC) to plug into the LAN. For example, a PC may have an Ethernet card installed in it to connect to an Ethernet LAN.
- (v) **Network Cabling:** Once the server, workstations and network interface cards are in place, network cabling is used to connect everything together. The most popular type of network cable is the shielded twisted-pair, co-axial and fiber optic cabling.

Question 7

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

- (i) *Diagnostic Routines*
 - (ii) *Electronic Data Interchange (EDI)*
 - (iii) *Graphical User Interface (GUI)*
 - (iv) *Turn Around Documents*
 - (v) *Storage Area Network (SAN)*
- (5 × 4 = 20 Marks)

Answer

- (i) **Diagnostic Routines:** It is system software which is a part of OS. These programs are usually written and provided by the computer manufactures. They assist in program debugging. They usually trace the processing of the program being debugged. MS Diagnostic program is one such program and it answers the query like:
 - a) What type of processor the computer has?
 - b) Is there a math coprocessor in the computer?
 - c) Who is the BIOS manufacturer?
 - d) What is the total amount of conventional memory in the computer?
 - e) What type of key board is attached to the computer?
 - f) What is the display type?

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g) What type of mouse is attached to the computer?

The diagnostic routines are however also often treated as a category of the utility or service program.

- (ii) **Electronic Data Interchange (EDI):** EDI is the transmission of business information in standard format between computers of independent organizations. There is no need to change the database structure by the companies for implementation of EDI but EDI software is required to be developed for translating the format used by one organization to the format being used by another organizations. EDI makes use of telecommunication technology for transfer of data.

In simple terms, Electronic Data Interchange is a computer to computer communication using a standard data format to exchange business information electronically between independent organizations.

It can be used to place an order by a company with another company or receiving an invoice. EDI does not aid in transmitting documents but dynamically moves data between companies' computer systems. Users can transmit business documents like quotes, shipping notices and even payment orders electronically to customers and suppliers. Design documents, electronic fund transfers and database transactions also come under EDI umbrella.

Advantages of EDI:

- a. **Issue and Receive orders faster:-** Due to automation of all the purchasing transactions, it becomes faster to issue and receive all the purchase orders electronically.
- b. **Make sales more easily:-** Quotations and estimates can be provided to the proposed buyer immediately by electronic means and if there are any queries of the buyer, then the same can be answered quickly which will help in making sales easily.
- c. **Get paid sooner:-** Due to receipt of Invoices electronically, it becomes faster for the buyer to make payment to the vendor. For making the payments to vendor quickly, buyer can negotiate for cash discount with vendor.
- d. **Minimize Inventory:-** Due to reduction in lead time of purchasing goods, less inventory will have to be maintained.
- e. **Reduce Letters:-** Due to electronic correspondence between seller and buyer through E-Mail, need of writing letters in hard copy form will be reduced.
- f. **Decrease enquiries:-** Various enquiries like availability of goods, expected date of delivery, discount policy, credit terms etc. between customers and suppliers can be made on-line.

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g. Immediate information of updated catalogues:- Information regarding introduction of new products, revision of sale price which are incorporate by the supplier in its catalogue, can be immediately communicated to the related parties with the help of electronic communication.

(iii) Graphical Uses Interface: Earlier operating systems like MS-DOS were text based operating system, in which user need to enter the command to perform a particular function. These commands are syntax sensitive and whenever, there is an error in typing the command or syntax of the command is not followed, an error message is displayed on the VDU. Therefore, user need to remember these commands to perform a particular function.

Now these days, command based interface has been replaced with graphic based interface known as Graphical User Interface (GUI). With the help of a GUI, user can interact with operating system with the help of small graphical symbols displayed on the VDU known as icons. User simply clicks on these icons with the help of mouse to perform a particular function. In this way, need of remembering commands by the user has been eliminated. Microsoft Windows is an example of GUI based operating system.

In addition to GUI based operating system, now these days, most of the software like MS-OFFICE, DTP software, Visual Studio software are also GUI based which are easy to use. These software relieve the user from remembering complex command to perform the function and make the operations simpler.

(iv) Turn Around Documents: Turn around documents, such as utility bills, are produced by the Accounting Information Systems, sent to the customer, and received back from him along with the payment. These bills are then used as input for further processing. This procedure reduces the input preparation workload and its potential of errors and is faster than key-stroke entry. Because keying is slow and tedious, alternative methods for online data are continually being developed. Three of these are voice input, the use of pen-like device to handwritten information, and touch screen.

(v) Storage Area Network (SAN): A storage area network (SAN) consists of a dedicated server which stores the entire data of an organization having improved security and integrity procedures in addition to adopting various data recovery procedures in case of any disaster of data. SAN allows the immediate availability and faster retrieval of data using Fiber optic communication link. SAN has been developed to handle high volume business transactions including E-Commerce transactions without affecting the network performance. In case of SAN, network performance remains unaffected with increase in volume of data i.e. even if the volume of data is increased in terabytes, data will be retrieved from the network at very high speed.

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Key factors for the growth of SAN are:-

- a) **E-Commerce:-** To expedite buying and selling of goods, services and information through Internet.
- b) **Globalization:-** Extension of IT systems across international boundaries.
- c) **Zero Latency:-** To exchange the information immediately for competitive advantages.
- d) **Transformation:-** To access the information immediately and processing of the same for successful business decisions.