**SUDHARSAN COLLEGE OF ARTS AND SCIENCE**

**PERUMANADU –PUDUKKOTTAI**

**MODEL QUESTION – II**

**FUNDAMENTALS OF INFORMATION TECHNOLOGY**

**CLASS: II B.A ENGLISH/ II B.COM Maximum : 75 Marks**

**SECTION – A**

**Answer ALL the Questions 10×2=20**

1. What are the different types of Software?
2. What is a spreadsheet?
3. Define: Operating system.
4. List the classification of Operating Systems.
5. What is a programming Language?
6. What is Cloud computing?
7. What is Database?
8. Define : Database Management System
9. Define: Data dictionary and Database schema.
10. Define: Metadata

**SECTION – B**

**Answer All Questions 05×05=25**

1. a) Explain the fetch-decode-execute cycle

(Or)

b) What are the basic capabilities of word Processors?

1. a) Write short notes on (i) Machine Language and (ii) Assembly Language

(Or)

b) Write types of high Level languages in detail

1. a) Write short notes on Compilers and Interpreters

(Or)

b) What are the functions of an Operating System?

1. a) List out the advantages of Database.

(Or)

b) Explain the characteristics of data in a Database?

1. a)Explain various types of Database Constraints

(Or)

b) Explain about the compilation process in detail

**SECTION - C**

**Answer any THREE Questions 03×10=30**

1. List out the advanced features of Word Processor?
2. Write notes on Spreadsheet & Presentation software.
3. Briefly Explain Image processing Software
4. Elaborate note on Classification of Operating System
5. Discuss the following

(i) Cloud Computing

(ii) Network Computing

(iii) Mobile Computing

**SECTION – A**

**1. Type of Software’s**

* System Software – Includes the operating system and all the utilities that enable the computer to function.
* Application Software – Includes programs that do real work for users. Ex: Word Processors, Spreadsheets, and database management system fall under the category of application software

**2. Spreadsheet**

 A Spreadsheet is a table of values arranged in rows and columns. Each value can have a predefined relationship to other values. If you change one value, the related values will change as well.

**3. Operating System**

 An operating system manages and coordinates the functions performed by the computer hardware, including the CPU, input/output devices, and secondary storage devices, and communication and network equipment.

**4. Classification of Operating System**

* Desktop Operating System
* Server Operating System
* Mainframe operating system
* Multi-User operating Systems
* Multiprocessing operating systems
* Multitasking operating systems
* Multithreading operating systems
* Real – time operating systems

**5. Programming Language**

 To communicate with the computer is to develop a third language- a language that can understand by both you and the computer.

 Programming language is – asset of rules that provides a way of instructing the computer to perform certain operations.

**6. Cloud Computing**

 Cloud computing is a computing paradigm in which tasks are assigned to a combination of connections, software’s, and services accessed over a network. This network of servers and connections s collectively known as “The Cloud”

**7. Database**

 A Collection of data designed to be used by different people is called a database. It is a collection of interrelated data stored together with controlled redundancy to serve one or more applications in an optimal fashion.

**8. Database Management System**

 A DBMS is a collection of programs that manages the database structure and control access to the data stored in the database. A database together with a database management system is the backbone of an efficient information system

**9.Data Dictionary**

 Data dictionary is a file that defines the basic organization of a database. A data dictionary contains a list of all files in the database, the number of records in each file, and the names and types of each filed.

**Database Schema**

 The schema defines various views of the database for the use of the components of the database management system and for the applications security.

**10. Metadata**

 In database management systems, data files are the files that store the database information , whereas other files, such as index files and data dictionaries, store administrative information known as metadata

**SECTION – B**

**11. A) fetch-decode-execute cycle**

A standard process describes the steps needed for processing to take place. It is called the Fetch - Decode - Execute cycle or sometimes simply called the Fetch-Execute Cycle.

First of all, both the data and the program that acts upon that data are loaded into main memory (RAM) by the operating system. The CPU is now ready to do some work.

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**1. FETCH**

* The first step the CPU carries out is to fetch some data and instructions (program) from main memory then store them in its own internal temporary memory areas. These memory areas are called 'registers'.
* This is called the 'fetch' part of the cycle.
* For this to happen, the CPU makes use of a vital hardware path called the 'address bus'.
* The CPU places the address of the next item to be fetched on to the address bus.
* Data from this address then moves from main memory into the CPU by travelling along another hardware path called the 'data bus'.
* You could imagine that it is a bit like a boat attendant at a lake calling in customers when their time is up -- "Boat number 3, time to come in!" The 'address' of the boat is 3 and the 'data' is its content. The boat is parked at a pier, which is like the internal register of the CPU.

**2. DECODE**

* The next step is for the CPU to make sense of the instruction it has just fetched.
* This process is called 'decode'.
* The CPU is designed to understand a specific set of commands. These are called the 'instruction set' of the CPU. Each make of CPU has a different instruction set.
* The CPU decodes the instruction and prepares various areas within the chip in readiness of the next step.

**3. EXECUTE**

* This is the part of the cycle when data processing actually takes place. The instruction is carried out upon the data (executed). The result of this processing is stored in yet another register.
* Once the execute stage is complete, the CPU sets itself up to begin another cycle once more.

**11. B) basic capabilities of word Processors**

Word Processors support the following basic features

* Insert text – you can make use of this feature to insert type anywhere in the document
* Delete text –By using this feature you can erase characters, words, lines, or pages as easily as you can cross them out on paper.
* Cut and Paste – cut and paste allow you to remove (Cut a section) of text from one place in a document and insert (Paste) it somewhere else.
* Copy – This facility allows you to duplicate a section of text. Copying refers to duplicating a section of a document and placing it in a buffer.
* Page size and Margins – allows you to define various page sizes and margins, and the word processors will automatically readjust the text so that fits.
* Search and Replace – this is a feature supported by most word processors, which lets you replace a character string (A series of characters) with another string wherever the first string appears in the document
* Word Wrap – In word Processing, word wrap is the feature that causes the word processor to force all text to fit within the defined margins
* Print – this feature allows you to send a document to a printer to get the hardcopy

**12.A) (i) Machine language**

Sometimes referred to as **machine code** or **object code**, **machine language** is a collection of [binary](https://www.computerhope.com/jargon/b/binary.htm) digits or bits that the computer reads and interprets. Machine language is the only language a computer is capable of understanding.

The exact machine language for a program or action can differ by operating system on the computer. The specific operating system will dictate how a compiler writes a program or action into machine language.

Computer programs are written in one or more [programming languages](https://www.computerhope.com/jargon/p/proglang.htm), like [C++](https://www.computerhope.com/jargon/c/cplus.htm), [Java](https://www.computerhope.com/jargon/j/java.htm), or [Visual Basic](https://www.computerhope.com/jargon/v/vb.htm). A computer cannot directly understand the programming languages used to create computer programs, so the program code must be [compiled](https://www.computerhope.com/jargon/c/compile.htm). Once a program's code is compiled, the computer can understand it because the program's code has been turned into machine language.

Below is an example of machine language (binary) for the text "Hello World".

01001000 01100101 01101100 01101100 01101111 00100000 01010111 01101111 01110010 01101100 01100100

**(ii) Assembly language**

 To reduce programming complexity and provides some standardization, assembly languages were developed.

 Assembly languages, also known as symbolic languages use abbreviations or mnemonic code- codes more easily memorized- to replace the 0s and 1s of machine languages.

 Assembly language does not replace machine languages. In fact, for an assembly language program to be executed, it must be converted to machine language. The assembly language program is referred to as a source program whereas the machine language program is an object program

Advantages

* They are more standardized and easier to use than machine languages.
* They operate very efficiently, although not as efficient as machine languages
* They are easier to debug, because programs locate and identify syntax errors

**12. B) Types of High Level Languages**

1. Procedure oriented languages or third generation
2. Problem oriented or fourth generation
3. Natural or fifth generation

**Procedure oriented languages**

General purpose programming languages are called procedural languages or third generation languages. They are languages such as Pascal, BASIC, COBOL, and FORTRAN, which are designed to express the logic, the procedure of a problem. Because of their flexibility, procedural languages are able to solve a variety of problems

Advantages

* The program statements resemble English and hence easier to work with
* Because of their English – like nature, less time is required to program a problem
* Once coded, program is easier to understand and modify

**Problem – oriented languages**

Fourth generation languages, also known as problem oriented languages, are high level languages designed to solve specific problems or develop specific applications by enabling you to describe what you want rather than step – by – step procedure.

Types

* Personal computer application software
* Query languages and report generators
* Decision Support systems
* Application generators

**Natural languages**

 Natural languages are still in the development stage, but they promise to have profound effect, particularly in the areas of artificial intelligence and expert systems.

Ex: LIPS and PROLOG

**13. A) Compilers and Interpreters**

 For a high level language to work on the computer it must be translated into machine language. There are two kinds of translators

1. Compilers
2. Interpreters

**Compilers**

In a compiled language, a translation program is run to convert the programmers entire high- level program, which is called the source code, into machine language code. This translation process is called *Compilation*

 The machine language code is called *object code* and can be saved and either run (execute) immediately or later.

Ex: C, C++

**Interpreters**

 In an interpreted language, a translation program converts each program statement into machine code just before the program statement is to be executed. Translation and execution occur immediately, one after another, *one statement at a time,*

Ex: BASIC

**13. B) Functions of Operating System**

* **Security –** The operating system uses password protection to protect user data and similar other techniques. it also prevents unauthorized access to programs and user data.
* **Control over system performance –** Monitors overall system health to help improve performance. records the response time between service requests and system response to have a complete view of the system health. This can help improve performance by providing important information needed to troubleshoot problems.
* **Job accounting –** Operating system Keeps track of time and resources used by various tasks and users, this information can be used to track resource usage for a particular user or group of user.
* **Error detecting aids –** Operating system constantly monitors the system to detect errors and avoid the malfunctioning of computer system.
* **Coordination between other software and users –** Operating systems also coordinate and assign interpreters, compilers, assemblers and other software to the various users of the computer systems.
* **Memory Management –** The operating system manages the Primary Memory or Main Memory. Main memory is made up of a large array of bytes or words where each byte or word is assigned a certain address. Main memory is a fast storage and it can be accessed directly by the CPU. For a program to be executed, it should be first loaded in the main memory. An Operating System performs the following activities for memory management:
* **Processor Management –** In a multi programming environment, the OS decides the order in which processes have access to the processor, and how much processing time each process has. This function of OS is called process scheduling. An Operating System performs the following activities for processor management. Keeps tracks of the status of processes. The program which perform this task is known as traffic controller. Allocates the CPU that is processor to a process. De-allocates processor when a process is no more required.
* **Device Management –** An OS manages device communication via their respective drivers. It performs the following activities for device management. Keeps tracks of all devices connected to system. designates a program responsible for every device known as the Input/Output controller. Decides which process gets access to a certain device and for how long. Allocates devices in an effective and efficient way. Deallocates devices when they are no longer required.
* **File Management –** A file system is organized into directories for efficient or easy navigation and usage. These directories may contain other directories and other files. An Operating System carries out the following file management activities. It keeps track of where information is stored, user access settings and status of every file and more… These facilities are collectively known as the file system.

**14. A) Advantages of Database**

* An organized and comprehensiveness of recording the result of the firms activities
* A receiver of data to be used in meeting the information requirement of the MIS users
* Reduced data redundancy
* Reduced updating errors and increased consistency
* Greater data integrity and independence from applications programs
* Improved data access to users through use of host and query languages
* Improved data security
* Reduced data entry, storage, and retrieval costs
* Facilitated development of new applications program
* Standard can be enforced: Standardized stored data format is particularly desirable as an old data to interchange or migration (change) between the systems
* Conflicting requirement can be handled

**14. B) characteristics of data in a Database**

The data in a database should have the following features

* Shared – data in a database are shared among different users and applications
* Persistence – Data is a database exists permanently in the sense that the data can live beyond the scope of the process that created it.
* Validity/Integrity/Correctness – Data should be correct with respect to the real world entity that they represent
* Security – data should be protected from unauthorized access.
* Consistency – Whenever more than one data element in a database represents related real world values, the values should be consistent with respect to the relationship
* Non –redundancy – no two data items in a database should represent the same real world entity
* Independence – the three levels in the schema (internal, conceptual, and external) should be independent of each other so that the changes in the schema at one level should not affect the other levels

**15. A) types of Database Constraints**

*Structural constraints*

 The structure of the information within the database gives an idea about entities in the database. Structural constraints are specified to force the placement of information into structures that best matches the application

*Type constraints*

 A type constraint limits the application to only one representation of information for an entity’s attribute. Type allows a limitation of the range of information representation that an attribute can have

Ex: Age – Number

*Range Constraints*

 Range constraints limit the values an attribute can take. It refers to the possible values hat a particular data item can have. Range constraints can be used to limit the value of a particular attribute within range.

Ex: Mobile Number – 10 Digits

*Relationship constraints*

 There constraints represent relationships on values between entities.

*Temporal Constraints*

 These constraints indicate the time period for which some information is valid

**15. B) compilation process**

 The objective of the compiler is to transform a program written in a high – level programming language from source code into object code. Programmers write programs in a form called source code. Source code must go through several steps before it becomes an executable program



* The first step is to pass the source code through compiler, which translates the high level language instructions into object code
* The final step in producing an executable program, after the compiler has produced object code, is to pass the object code through linker.
* The linker combines modules and gives real values to all symbolic addresses

**16. Advanced features of Word Processor**

* File management – many word processors contain file management capabilities that allow you to create, delete, move, and search for files
* Font Specifications – This feature allows you to change fonts within a document. Ex: Bold, Italic, and underlining. Most word processors also let you change the font size even he typeface.
* Graphics – one of the most important features of a word processor is the capability to embed illustrations within the word processor; others let you insert an illustration produced by a different program
* Footnotes and Cross-References – Word processors automate the numbering and placement of footnotes and enable you to easily cross-reference other sections of the document.
* Headers and Footers –*Header* is a line or lines of text that appears at the top of each page of a document. Once you specify the text that should appear in the header. The word processor automatically inserts it. *Footers* are one or more lines of text that appear at the bottom of every page of a document
* Page Numbering – The word processors automatically keeps track of page numbers so that the correct numbers appears on each page.
* Layout – By using the layout feature one can specify different margins within a single document and to specify various methods for indenting paragraphs.
* Macros – A Macro is a character or a word that represents a series of keystrokes. The keystrokes can represent text or commands. The ability to define macros allows you to save yourself a lot of time by replacing common combinations of keystrokes
* Merges – Merge feature allows you to merge text from one file to another. This is particularly useful for generating many files that have the same format but different data. Generating mailing labels is the classic example of using merges.
* Spell Checker – This is utility that allows you to check the spelling of words. It will highlight any word that it does not recognize
* Tables of Contents and Indices –this feature allows you to automatically create a table of contents and index based on special codes that you insert in the document.
* Thesaurus –Most word processors have a built – in thesaurus that allows you to search for synonyms without leaving the word processor
* Windows – The windows feature allows you to edit two or more documents at the same time

**17. Spreadsheet**

A spreadsheet is a table of values arranged in rows and columns. Each value can have a predefined relationship to the other values. If you change one value, the related value will change as well. Spreadsheet application (often referred to simply as spreadsheets) are computer programs that let your create and manipulate spreadsheets electronically.

In a spreadsheet application, each value is placed in a cell. You can define what type of data is in each cell, and how different cells depend on one another. The relationships between cells are called formulas; and the names of the cells are called labels.

**Characteristics of a Spreadsheet**

Spreadsheet software organizes data into rows and columns, it has many other characteristics.

These characteristics include:

* Table format
* Recalculations
* Data forms
* Presentations
* Storage and retrieval
* Standard format

**Table Format**

 The location or address of a cell can be identified by the column and row that intersect to form the cell.

**Recalculations**

 Once the tables, numbers, and formulas have been entered, the spreadsheet software can automatically complete the calculated results. And results can be recalculated when revised numbers are entered.

**Data forms**

Three different kinds of data can be entered into a spreadsheet. They are:

* Labels or Titles: A Label is a description.
* Numbers: Numbers that the user enters directly into a cell are the second kind of data in a spreadsheet.
* Calculated entries - Calculated entries are figures that are derived or calculated from or using the existing entries. Calculated entries are computed using a formula, an instruction that specifies the steps to obtain desired mathematical results.

**Presentation**

 Most spreadsheet users need to present the results of their analysis in a way that communicates the information as effectively as possible. Sometimes a simple printout of all or a section of the spreadsheet will suffice.

**Storage retrial**

 The ability to store and retrieve data is central to any business information system. Consequently, an important feature of spreadsheet software is its ability to store and retrieve the data with which it works

**Standard Formats**

Another important feature of the spreadsheet software is that it can be used as a standard format into which data can be downloaded from other computers and data sources.

**18. Image processing Software**

Image processors or graphic programs enable you to create, edit, manipulate, ad special effects, view, print, and save images

**Paint Programs**

A paint program is a graphic program that enables you to draw pictures on the display screen, which is represented as bit maps (bit-mapped graphics). Most paint program provides the tools in the form of icon. By selecting an icon, you can perform functions associated with the tool.

In addition to these tools, paint programs also provide easy ways to draw common shapes such as straight lines, rectangles, circles, and ovals. Sophisticated paint applications are often called image-editing programs.

Ex: Windows Paint, Corel painter

**Draw Programs**

 A Draw program is another graphics program that enables you to draw pictures, then store the images in files, merge them into documents, and print them. Unlike paint programs, which represent images as bit maps, draw programs use vector graphics, which makes it easy to scale images to different sizes.

 In addition, graphics produced with a draw program have o inherent resolution. Rather, they can be represented at any resolution, which makes them ideal for high –resolution output.

Ex: Adobe Illustrator, CorelDRAW

**Image Editors**

 An image editor is a graphic program that provides a variety of special features for altering bit-mapped images. The difference between image editors and paint programs is not always clear-cut, but in general image editors are specialized for modifying bit-mapped images, such as scanned photographs, whereas paint programs are specialized for creating images.

**19. Classification of Operating System**

**Desktop Operating systems**

 Operating systems that run on desktop computers are the most common. Generally the operating systems in this category include windows; Mac OS and. Windows in its many versions is currently including Widows, Mac OS and DOS.

**Server Operating System**

Computers in modern organization’s networks are connected to one another not directly but through powerful computers called servers that provide security to the networks and route traffic from one network to another.

**Mainframe Operating System**

IBM mainframe computers use an operating system called OS/z and Digital Equipment corporation minicomputers use one called OpenVMS>

**Multiuser OS:**

In a multiuser OS, more than one user can use the same system at a same time through the multi I/O terminal or through the network.

For example: windows, Linux, Mac, etc.

A multiuser OS uses timesharing to support multiple users.

**Multiprocessing OS:**

A multiprocessing OS can support the execution of multiple processes at the same time. It uses multiple number of CPU. It is expensive in cost however; the processing speed will be faster. It is complex in its execution. Operating system like UNIX, 64 bit edition of windows, server edition of windows, etc. are multiprocessing.

**Multiprogramming OS:**

In a multiprogramming OS more than one program can be used at the same time. It may or may not be multiprocessing. In a single CPU system, multiple programs are executed one after another by dividing the CPU into small time slice.

Example: Windows, Mac, Linux,etc.

**Multitasking OS:**

In a multitasking system more than one task can be performed at the same time but they are executed one after another through a single CPU by time sharing. For example: Windows, Linux, Mac, Unix,etc.

Multitasking OS are of two types:

a) Preemptive multitasking

b) Co-operative multitasking

In the preemptive multitasking, the OS allows CPU times slice to each program. After each time slice, CPU executes another task. Example: Windows XP

**21. Cloud Computing**

The cloud is also *not* about having a dedicated hardware server in residence. Storing data on a home or office network does not count as utilizing the cloud.

For it to be considered “cloud computing,” you need to access your data or your programs over the Internet, or at the very least, have that data synchronized with other information over the Net. In a big business, you may know all there is to know about what’s on the other side of the connection; as an individual user, you may never have any idea what kind of massive data-processing is happening on the other end. The end result is the same: with an online connection, cloud computing can be done anywhere, anytime

**Characteristics of Cloud Computing**

**On-demand:**Resources should be always available when you need them, and you have control over turning them on or off to ensure there’s no lack of resource or wastage happen.

**Scalable:**You should be able to scale (increase or decrease the resource) when necessary. The cloud providers should have sufficient capacity to meet customer’s needs.

**Multi-tenant:**Sometimes you may be sharing the same resource (e.g. hardware) with another tenant. But of course, this is transparent to the customer. Cloud provider shall responsible for the security aspect, ensuring that one tenant won’t be able to access other’s data.

**Self-service computation and storage resource:**Related processes including billing, resource provisioning, and deployment should be self-service and automated, involving much less manual processing. If a machine where our service is hosted fails, the cloud provider should be able to failover our service immediately.

**Reliability:**Cloud provider should be able to provide customer reliability service, committing to uptimes of their service.

**Utility-based subscription:**You will pay the cloud provider as a utility based subscription, just like paying your electricity bill – without any upfront investment.

**Network Computing**

Network computing refers to the use of computers and other devices in a linked network, rather than as unconnected, stand-alone devices. As computing technology has progressed during the last few decades, network computing has become more frequent, especially with the creation of cheap and relatively simple consumer products such as wireless routers, which turn the typical home computer setup into a local area network.

**Mobile Computing**

 Mobile computing is a generic term describing one’s ability to use technology while moving, as opposed to portable computers, which are only practical for use while deployed in a stationary configuration. Many types of mobile computers have been introduced since the 1990s, including the PDAs and Smart Phones.

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**MODEL QUESTION – III**

**FUNDAMENTALS OF INFORMATION TECHNOLOGY**

**CLASS: II B.A ENGLISH/ II B.COM Maximum: 75 Marks**

**SECTION – A**

**Answer ALL the Questions 10×2=20**

1. Define: Communication Network
2. Define:Computer Network and List its types.
3. Define: Protocol
4. What is a Distributed System
5. Define : Internet and WWW
6. Expand : HTML, HTTP, TCP, IP,FTP, URL
7. Define: Intranet
8. Define: E-Commerce
9. Define : Data Warehouse and Data Mining
10. Expand : WBT, CBT, CAI

**SECTION – B**

**Answer All Questions 05×05=25**

1. a)Explain about the types of Modulation techniques

(Or)

b) Different Types of Networks

1. a) Advantages and Disadvantages of Distributes Systems

(Or)

b) Explain about Communication Media

1. a) What are the functions of telecommunication software?

(Or)

b) Explain the working of Radio and Television

1. a) Explain the uses of Multimedia in Entertainment and marketing

(Or)

b) Discuss about Domain Names in detail

1. a) What are the uses of Virtual Reality?

(Or)

b) Write about the Data mining applications

 Data Warehousing Architecture

**SECTION - C**

**Answer any THREE Questions 03×10=30**

1. Briefly explain about Network topology
2. Discuss about Internet Protocols
3. Explain the Following :
4. IP Address
5. E-Mail
6. URL
7. WWW
8. HTTP
9. Explain about the uses of Computers in Business and Marketing
10. Explain about the uses of Computer in Education and Training

Explain about uses of Computers at Home

**SECTION - A**

**1. Communication Network**

 A Communication network is any arrangement where a sender transmits a message to a receiver over a channel consisting of some type of medium. The network consists of five basic components: Terminals, Telecommunication processors, telecommunication channels and media, computers and telecommunications software’s.

**2. Network**

 A **computer network** is a digital telecommunications**network** which allows nodes to share resources. In**computer networks**, computing devices exchange data with each other using connections (data links) between nodes.

* LAN – Local Area Network
* MAN – Metropolitan Area Network
* WAN – Wide Area Network

**3. Protocol**

 A Protocol is an agreed – Upon format for transmitting data between two devices. The protocol determines the following:

* The type of Error checking to be used
* Data compression method, if any
* How the sending device will indicate that it has finished sending a message
* How the receiving device will indicate that it has received a message

**4. Distributed System**

 A distributed system is a network that consists of autonomous computers that are connected using a distribution middleware. They help in sharing different resources and capabilities to provide users with a single and integrated coherent network.

**5. Internet**

 The internet is a global system of interconnected computer networks that interchange data by packet switching using the standardized Internet Protocol Suite (TCP/IP)

**WWW**

 The World Wide Web is the graphical internet service that provides a network of interactive documents and the software to access them. It is based on documents called pages that combine text, pictures, forms, sound, animation and hypertext links called hyperlinks

**6. HTML – Hypertext Markup Language**

 **HTTP – Hypertext Transfer Protocol**

 **TCP – Transmission Control Protocol**

 **IP – Internetwork Protocol**

 **FTP – File Transfer Protocol**

 **URL – Uniform Resource Locator**

**7. Intranet**

 Intranet is a network connecting an affiliated set of clients using standard Intranet Protocols, Especially TCP/IP and HTTP or as an IP – Based network of nodes behind a firewall, or behind several firewalls connected by secure, possibly virtual networks

**8. E-Commerce**

 **E-commerce**, also known as electronic **commerce** or internet **commerce**, refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions.

**9. Data Warehouse**

 Data warehousing is the process of constructing and using a data warehouse. A data warehouse is constructed by integrating data from multiple heterogeneous sources that support analytical reporting, structured and/or ad hoc queries, and decision making. Data warehousing involves data cleaning, data integration, and data consolidations

**Data Mining**

 Data mining is the process of analyzing hidden patterns of data according to different perspectives for categorization into useful information, which is collected and assembled in common areas, such as data warehouses, for efficient analysis, data mining algorithms, facilitating business decision making and other information requirements to ultimately cut costs and increase revenue

10. WBT – Web Based Training

 CBT - Computer Based Training

 CAI - Computer Aided Instruction

**SECTION – B**

 **11. A) Types of Modulation Techniques**

**Analog Modulation**

 In this modulation, a continuously varying sine wave is used as a carrier wave that modulates the message signal or data signal. The Sinusoidal wave’s general function is shown in the figure below, in which, three parameters can be altered to get modulation – they are amplitude, frequency and phase, so the types of analog modulation are:

* Amplitude modulation (AM)
* Frequency modulation (FM)
* Phase modulation (PM)

In **amplitude modulation**, the amplitude of the carrier wave is varied in proportion to the message signal, and the other factors like frequency and phase remain constant. The modulated signal is shown in the below figure, and its spectrum consists of lower frequency band, upper frequency band and carrier frequency components. This type of modulation requires greater band width, more power. Filtering is very difficult in this modulation.

**Frequency modulation** (FM) varies the frequency of the carrier in proportion to the message or data signal while maintaining other parameters constant. The advantage of FM over AM is the greater suppression of noise at the expense of bandwidth in FM. It is used in applications like radio, radar, telemetry seismic prospecting, and so on. The efficiency and bandwidths depend on modulation index and maximum modulating frequency.

In**phase modulation**, the carrier phase is varied in accordance with the data signal. In this type of modulation, when the phase is changed it also affects the frequency, so this modulation also comes under frequency modulation.

**Digital Modulation**

Digital modulation is of several types depending on the type of signal and application used such as Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, Differential Phase Shift Keying, Quadrature Phase Shift Keying, Minimum Shift Keying, Gaussian Minimum Shift Keying, Orthogonal Frequency Division Multiplexing, etc., as shown in the figure.

**11. B) Different types of Networks**

**Local Area Network (LAN)**

 It is also called LAN and designed for small physical areas such as an office, group of buildings or a factory. LANs are used widely as it is easy to design and to troubleshoot. Personal computers and workstations are connected to each other through LANs. We can use different types of topologies through LAN, these are Star, Ring, Bus, Tree etc.

 LAN can be a simple network like connecting two computers, to share files and network among each other while it can also be as complex as interconnecting an entire building.

 LAN networks are also widely used to share resources like printers, shared hard-drive etc.

**Metropolitan Area Network (MAN)**

 It was developed in 1980s.It is basically a bigger version of LAN. It is also called MAN and uses the similar technology as LAN. It is designed to extend over the entire city. It can be means to connecting a number of LANs into a larger network or it can be a single cable. It is mainly hold and operated by single private company or a public company.

**Wide Area Network (WAN)**

It is also called WAN. WAN can be private or it can be public leased network. It is used for the network that covers large distance such as cover states of a country. It is not easy to design and maintain. Communication medium used by WAN are PSTN or Satellite links. WAN operates on low data rates.

**12. A) Advantages and Disadvantages of Distributes Systems**

**Advantages of Distributed System:**

* Sharing Data: There is a provision in the environment where user at one site may be able to access the data residing at other sites.
* Autonomy: Because of sharing data by means of data distribution each site is able to retain a degree of control over data that are stored locally.
* In distributed system there is a global database administrator responsible for the entire system. A part of global data base administrator responsibilities is delegated to local data base administrator for each site. Depending upon the design of distributed database
* Each local database administrator may have different degree of local autonomy.
* Availability: If one site fails in a distributed system, the remaining sites may be able to continue operating. Thus a failure of a site doesn't necessarily imply the shutdown of the System.

**Disadvantages of Distributed Systems:**

The added complexity required to ensure proper co-ordination among the sites, is the major disadvantage. This increased complexity takes various forms:

* Software Development Cost: It is more difficult to implement a distributed database system; thus it is more costly.
* Greater Potential for Bugs: Since the sites that constitute the distributed database system operate parallel, it is harder to ensure the correctness of algorithms, especially operation during failures of part of the system, and recovery from failures. The potential exists for extremely subtle bugs.
* Increased Processing Overhead: The exchange of information and additional computation required to achieve interstice co-ordination are a form of overhead that does not arise in centralized system.

**12. B) Types of Communication Medium**

**Twisted Pair Cable**

 This most generally used in network. It is used to prevent the crosstalk i.e noise generated by pairs when electric current passed through it. In Twisted pair cable pairs are twisted together so that they produce magnetic field exact opposite to each other and prevent the crosstalk effect.  It only covers 100 meters distance approx.

They are two types of  twisted pair cable:

**1. Unshielded twisted pair (UTP) cable**

 Each of the eight individual copper wires in UTP cable is covered by an insulating material. It limit the effect of electromagnetic interference (EMI) and radio frequency interference (RFI). UTP cable is installed using a Registered Jack 45 (RJ-45) connector.

UTP cable is easy to install and is less expensive than other networking media. That’s why used most of the major networking architectures.

**Coaxial Cable**

Coaxial Cables has two wires concentric to each other. Consisting a wire conductor in the center , a circumferential outer conductor called foil shield, and dielectric an insulating medium separating these two conductors. The outer conductor is protected in an outer jacket.

It is more expensive then twisted cable and less then fiber optic cable and cover more distance with the help of repeaters. Repeater regenerates the signals installed between the node so that it covers approx 500 meters maximum. It is widely used in cable TV industries for Data communication DOCSIS.

It is installed using a (BNC) British Navel Connector. It can supply 10 to 100 Mbps speed.

**Fiber Optic Cable**

Fiber Optic cable is more expensive then any other cable but suited for network industries. It can transfer data in speed of GB/sec. There is no any cause effecting by electromagnetic fields.

Fiber Optic cable is made of glass thinnest more then Human Hair. Made by core and cladding further coating of polyimid. Core and cladding caused total internal reflection by which data is transferred without any lose to termination end. It can serve Data transfer to 10 KM with speed of light.

But it is still not possible for home and small building to support such type of networks due its cost.

**Wireless Communication**

Wireless communication uses Radio Frequencies (RF) or Infrared (IR) signal to transmit the data between network devices. Wireless Access Point is required to establish such type communication and it is necessary.

For wireless communication each device must have a Wireless Adapter or Wireless NIC card. All signals are passes through the air with speed 9 Kbps t0 54 Mbps. Wireless range may varies with wireless access point.

Some applications of wireless communication:

-Accessing the Internet using a cellular phone

-Establishing a home or business Internet connection over satellite

-Using a wireless keyboard and mouse for the PC

**13. A) functions of telecommunication software**

* Telecommunication software packages provide a variety of communications support services. The number and type of terminals, computers, communications processors, and communications activities involved determine the capabilities of the program required. The telecommunications software provides several major functions such as:
* Access control – This function establishes the connections between terminals and computers in a network. The software works with a communications processor (such as a modem) to connect and disconnect communications links and establish parameters such as transmission speed, mode and direction.
* Transmission control – this function allows computers and terminals to send and receive commands, messages, data and programs. Some error checking and correction of data transmissions may also be provided. Data and programs are usually transmitted in the form of files, so this activity is frequently called file transfer.
* Network control – This function manages communications in a network. Software determines transmission priorities, route messages, polls terminals in the network, and forms waiting lines of transmission requests. It also logs statistics of network activity and resource usage and detects and corrects errors
* Error control – Error control involves detection and correction of transmission
* Security control – security control protects a communications network from unauthorized access

**13. B) Working of Radio**

 A radio receiver in its simplest form comprises of an input circuit for tuning into frequencies of the various transmitters to be received, a demodulation circuit for separating audio frequencies from the high – frequencies carries waves, a low – frequency amplifier stage, and a loud speaker.

The amplifier elements (transistors) are supplied with the necessary operating voltages by a suitable device corresponding to the frequency bands on which the various transmitters operate, receivers are equipped to receive long waves(150-285KHz), medium waves (up to 1605 KHz), short waves (6-21.4MHz), and ultra – Short waves (up to 100 MHz). Long, medium and short wave reception function with a channel spacing of 9 KHz and with amplitude modulation (AM).

The channel spacing in the ultra-wave range is 300 KHz, and in this range frequency modulation (FM) is employed.

**Television**

 Television is the system of sending and receiving pictures and sound by means of electronic signals transmitted through wires and optical fibers or by electromagnetic radiation. These signals are usually broadcast from a central television station to reception devices in television sets in homes or to relay stations used by cable television provides. The most common use of television is a source of information and entertainment for viewers in their homes

**14. A) uses of Multimedia in Entertainment**

One of the earliest applications of multimedia was for computer games. At that time many people believed that multimedia was useful only for computer games.

With the help of multimedia the moviemakers now have the capability of creating what they want – the imagination is the only limitation

With the arrival of CD and the internet, the entertainment industry makes a huge leap into a new era with a winning card- multimedia.

Armed with images, sounds, full-motion video and interactive capability, multimedia become a dominant factor in today’s technological world.

**Uses of Multimedia in marketing**

Powerpoint Presentations

Powerpoint has become de rigger in the work place due to its ease of use and simple system for creating the actual slides. With Powerpoint, images taken from the Web or from personal cameras can be merged with text and some graphic design essentials to create striking presentation that can be used in-house, with clients, or as presentations that are downloadable from the Internet.

Website Design

Speaking of websites, the largest growth in multimedia use over the past decade or so has been within website development. Internet marketing, website hosting and the coding of websites are all big business these days and they grew out of the proliferation of websites for business and for pleasure

On-Demand Video

Only those who have led the most sheltered of lives are unaware of the huge and growing media empire that is YouTube, now owned by Google. This video sharing platform offers everything from band videos and avant-garde art film clips to cartoons, commercials, documentaries and TV programs from other eras.

**14. B) Domain Names**

 A domain name is a way to identify and locate computers connected to the internet. 0no two organizations can have the same domain name. A domain name always contains two or more components separated by periods, called “dots”. Ex: [www.google.com](http://www.google.com)

The last portion of the domain name is the top-level domain name and describes the type of organization holding that name. The major categories for top level domain names are:

* aero – Air Transport industry
* biz – business
* com – commercial entities
* edu – educational institutions
* gov – government entities
* info – information
* in – international organizations
* mil – united states military
* net – organizations activity involved in internet operations
* org – organizations that do not fit into any other category