

1. (a) Perform the following:

6

(i) Convert the number to binary. $(16.25)_{10}$

Answer:

Base	Decimal No	Remainder		
2	16	0		
2	8	0		0.25×2
2	4	0		0.50×2
2	2	0		$(0.25)_{10} = (0.01)_2$
	1			
$(16)_{10} = (10000)_2$				
$(16.25)_{10} = (10000.01)_2$				

(ii) Convert the number to decimal. $(10111010)_2$

Answer:

Position	7	6	5	4	3	2	1	0
Binary	1	0	1	1	1	0	1	0

$$\begin{aligned}
 10111010 &= (1 \times 2^7) + (0 \times 2^6) + (1 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0) \\
 &= 128 + 0 + 32 + 16 + 8 + 0 + 2 + 0 \\
 (10111010)_2 &= (186)_{10}
 \end{aligned}$$

(iii) Convert the number to binary. $(ABC)_{16}$

Answer:

Hex	A	B	C
Bin	1010	1011	1100
$(ABC)_{16} = (1010\ 1011\ 1100)_2$			

(iv) Convert the number to hexadecimal. $(11\ 0011\ 1001)_2$

Answer:

11	0011	1001
3	3	9
$(1100111001)_2 = (339)_{16}$		

(b) List the input/output devices for the following situations. Also describe the features of the device:

4

(i) For taking photographs

Answer: Digital Camera: A Digital camera is an electronic device which takes video or still photographs or both, digitally by recording images via an electronic image sensor.

(ii) Producing output of photograph

Answer: Printer: Printers are used for producing output on paper. There are a large variety of printers and printing devices which can be classified according to the print quality and printing speed.

(iii) Input of voice

Answer: Microphone: A Microphone is an acoustic-to-electric transducer or sensor and is used to convert sound signals into electrical signals.

(iv) Output of voice

Answer: Speaker: Computer speakers, or multimedia speakers, are external speakers, commonly equipped with a low-power internal amplifier which produces sound as output.

(c) What is the role of main memory in a Computer? Why is it called RAM? How is RAM different from ROM?

4

Answer: Main memory: In Computer processing of programs stored in the main memory, interpretation of the instructions and issuing of signals for other units of the computer to execute them. It stores programs and data which are currently needed by the CPU. The size of the main memory is comparatively much smaller than that of the secondary memory because of its high cost. The CPU communicates directly with the main memory.

RAM: -RAM is the functional equivalent of computer memory, in a random-access memory any memory location can be accessed in a random manner without going through any other memory location. The access time is same for each memory location. RAM is a volatile memory. It is Also called Read/Write memory.

Difference Between RAM and ROM:

Random Access Memory (RAM)	Read Only Memory (ROM)
Volatile	Non-volatile
Read and write both.	Only Read.
Storage Temporary	Storage Permanent
Cost High	Comparatively low
SRAM and DRAM	PROM, EPROM and EEPROM
The stored data in RAM lost in case of power failure.	Data retained in ROM even if the power is turned off.

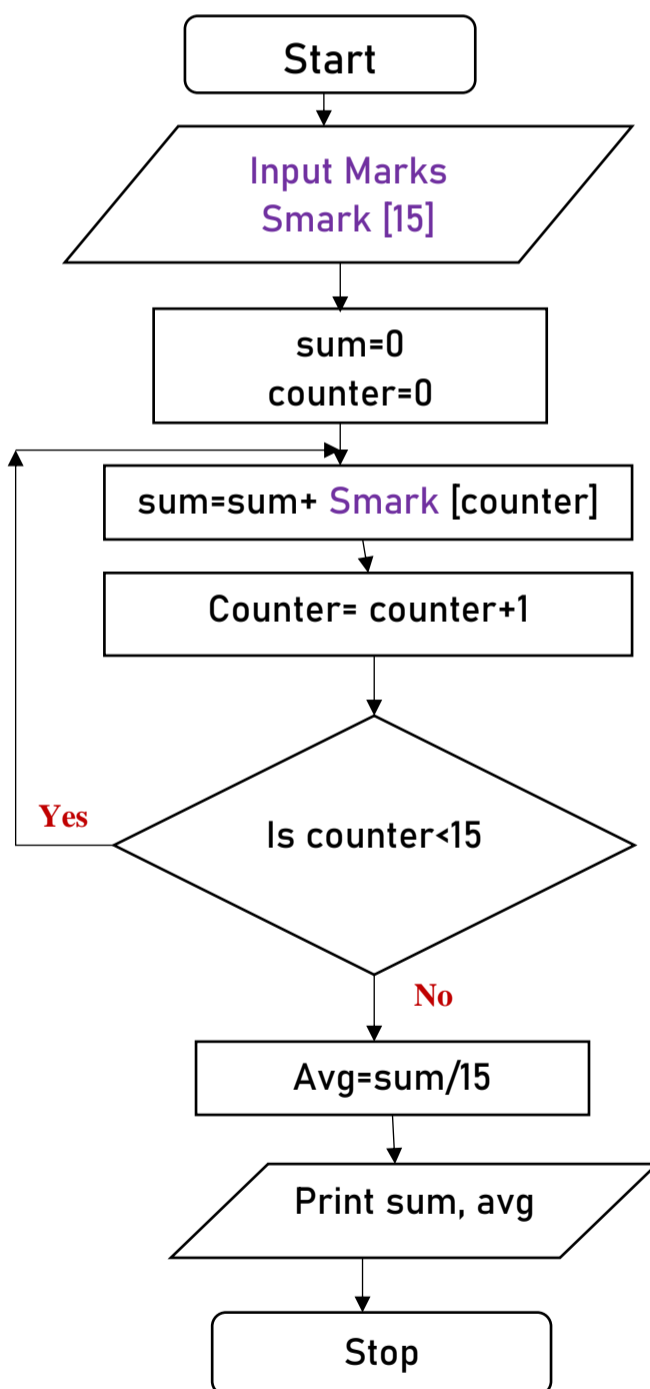
(d) You have attached a new printer to your computer. Which software will you require so that printer is installed correctly and starts to print? List features of the required computer software. 3

Answer: Device Drivers: Device drivers are shared computer programs that provide an interface between the hardware devices and operating system or other higher-level programs. Features are;

- ❖ We need a specific software program to control each hardware device attached to the computer.
- ❖ It is very tedious to make any piece of hardware work.
- ❖ The device driver for the printer may not have been installed.
- ❖ For the driver for the particular printer on the internet and install it on our machine.

(e) Draw a flowchart for a program to find the average marks of the students of a class in a subject. The class strength is 15. 5

Answer:



(f) List six operations that can be performed using a word processor.

3

Answer: A word processor (more formally known as document preparation system) is a computer application used for composition, editing, formatting and printing of any sort of printable material. Word processing was one of the earliest applications for the personal computer in office productivity. The common operations we can perform

- i. Creating a Word File for Documentation
- ii. Editing a Word documents
- iii. Copying in Document
- iv. Drawing Table
- v. Drawing Chart and Graphs
- vi. Font Size and Colouring
- vii. Spell Checking and Grammar Checking

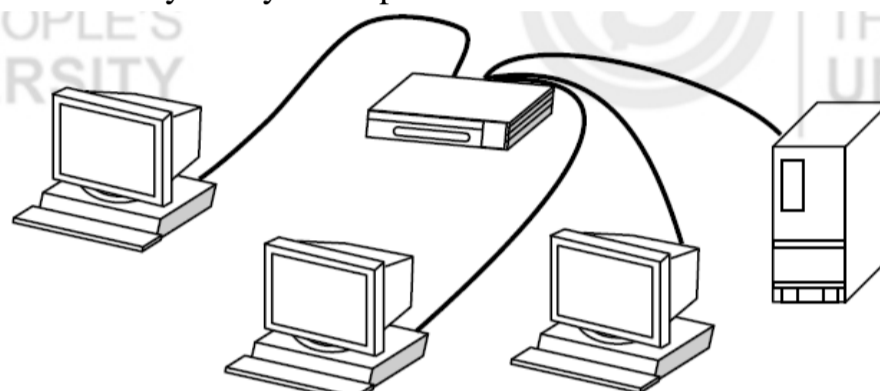
(g) Explain the characteristics of hub and a router. Which of the two will be needed if you want to connect from one network to another?

5

Answer: Hub: It is central place to connect computers to a network, traditionally for a star topology. There are two types of hubs:

Passive A passive hub simply connects the various nodes.

Smart. A smart hub can be remotely controlled by the system operator. It can send back the information of packet traffic for analysis.



Routers: They control and direct network traffic. A network can be segmented into small networks using a router. The small networks are known as zones. If the packet's destination is in the same zone, the packet is not exposed to the other zones. This limits traffic across the entire network.



Router

If we have a LAN that we want to **connect to the internet, we will need to purchase a router.** In this case, the router serves as the translator between the information on our LAN and the internet. It also determines the best route to send the data over the internet.

(h) What is an IPv4 address ? What are its components ? What is the use of a subnet mask ? Explain with help of an example.

6

Answer: Internet Protocol Version 4 (IPv4) which is currently being used on most of the Internet. An IPv4 address is a 32-bit address. IPv4 address is a series of four numbers separated by dots (.). The four numbers range between 0 and 255. So IPv4 address takes only 4-bytes (or 32-bits) of computer memory. Not all the IPv4 addresses may be used to identify a computer.

Some addresses of IPv4 are not used at all due to certain restrictions. In addition, some addresses are reserved, for example; the IP address 255.255.255.255 is used for broadcasts.

Every device, computer, printer or peripheral connected to a TCP/IP network must have its own IP address. Each 32-bit IP address consists of two components:

- ❖ Network Identifier (Net ID) – which identifies one of the Networks that is a part of Internet.
- ❖ Device Identifier (Device ID) – which identifies a specific device within the identified Net-ID.

The subnet mask is similar to an IP address - it is also a 4-byte (or 32-bits) field and can be represented using dot notation. In binary, it always comprises a series of ones, followed by sequence of zeros.

Example

IP Address	Subnet Mask	Number of IP addresses
10.0.0.0 – 10.255.255.255	255.0.0.0	16,777,216
172.16.0.0 – 172.31.255.255	255.240.0.0	1,048,576
192.168.0.0 – 192.168.255.255	255.255.0.0	65,536

(i) What is a Browser? Why is it needed? List any two features of a browser.

4

Answer: The client software package called Web browser accesses the Web and contacts a server computer on the Internet, and exchanges information with the server.

It understands how to communicate to a Web server through HTTP protocol, displays information and gives a way to represent hypertext links. The two most popular Web browsers are:

- ❖ Netscape's Navigator and Microsoft's Internet Explorer (IE).

Features of a browser:-

- ❖ The browser is one of the very intelligent software that contributed to the growth of World Wide Web.
- ❖ A browser converts the standard Hyper Text Markup Language (HTML) web pages to a very sophisticated display with colours and pictures.

2. (a) What is the role of Arithmetic Logic Unit (ALU) and Control Unit (CU) in a computer?

4

Answer: The ALU and control unit are together known as Central Processing Unit (CPU) or processor. The memory and CPU consist of electronic circuits and form the nucleus of the computer.

Arithmetic and Logic Unit (ALU): The function of an ALU is to perform arithmetic and logic operations such as addition, subtraction, multiplication, and division; AND, OR, NOT (complement) and EXCLUSIVE-OR operations. It also performs increment, decrement, shift and clear operations.

Control Unit (CU): The control unit determines the sequence in which computer programs and instructions are executed. Things like processing of programs stored in the main memory, interpretation of the instructions and issuing of signals for other units of the computer to execute them. It also acts as a switch board operator when several users access the computer simultaneously. Thereby it coordinates the activities of computer's peripheral equipment as they perform the input and output.

(b) What is a Super Computer? How is it different to mainframe computer ?

4

Answer: Supercomputers are ultra-fast computers designed to process huge amounts of scientific data then display the underlying patterns that have been discovered. These machines are essential for applications ranging from nuclear weapon to accurate weather forecasting. Super Computers are used for highly calculation-intensive tasks such as molecular modeling, climate research, weather forecasting, quantum physics, physical simulations etc.

Mainframes computers are generally 32-bit microprocessors. They operate at very high speed, have very large storage capacity and can handle the work load of many users. They are generally used in centralized databases. They are also used as controlling nodes in Wide Area Networks (WAN).

Difference between Supercomputer and Mainframe:

Supercomputer	Mainframe
An extremely fast computer capable of performing hundreds of millions of instructions per second.	A large computer used as large servers and for intensive business applications.
A supercomputer usually includes more than one CPU (Central Processing Unit), memory, I/O system, and an interconnect.	Many banks of internal storage, multiple input/output devices and magnetic disk and tape storage.
Cray supercomputer	IBM ES/9000

(c) What are the uses of magnetic tape ? Explain, how is the access mechanism of magnetic tape different than that of magnetic disks.

4

Answer: Magnetic Tape: Magnetic tape is a mass storage device. It is used as back up storage. It is serial access type storage device. It is made up of plastic material. Standard sizes are 1/2-inch, 1/4-inch, 8 mm and 3 mm wide. Earlier, tapes used 9 tracks to store a byte with parity bit. Today tapes use 18 or 36 tracks to store a word or double word with parity bits. The storing capacity is 2 GB-800 GB of compressed data.

- ❖ They are sequential access device whereas a disk drive is a direct access device.
- ❖ In **magnetic disk drive** system, the head moves to the position of the desired record. But in the case of **magnetic tape drive** system, the head moves sequentially. It has to move through the adjacent records until it reaches the desired record.

(d) Explain the terms pixel, resolution and LEDs in the context of computer monitors.

4

Answer:

- ❖ The process of the raster scan is followed and the dots of the entire screen are scanned. Each dot is called a picture element or in short *pixel* or *pel*.
- ❖ The resolution of a monitor means the number of pixels per inch appearing on its surface. In general, the greater the number of pixels the sharper is the images. Most modern monitors can display 1024 by 768 pixels. Some high-end models of computer monitors can display 1280 by 1024, or even 1600 by 1200 pixels. Even 3280 by 2048 resolution monitors are available for special purposes.
- ❖ At present TFT LCD monitors are widely used in notebooks. These are light weight monitors and are used in laptop computers. Active-matrix structure is used by most of the modern LCD monitors and television sets. In this technology, a matrix of thin-film transistors (TFT) is added to the polarizing and color filters. It enhances the display to make it look brighter and sharper.

(e) Explain the role of “Recycle Bin” and “Taskbar” on windows operating system.

4

Answer: Recycle Bin: In Windows Operating System, Recycle Bin is a temporary folder which holds files and folders before it is permanently deleted from the storage devices. The Recycle Bin only stores, files deleted from hard drives, not from removable media, such as memory cards and pen drive/ flash drives.

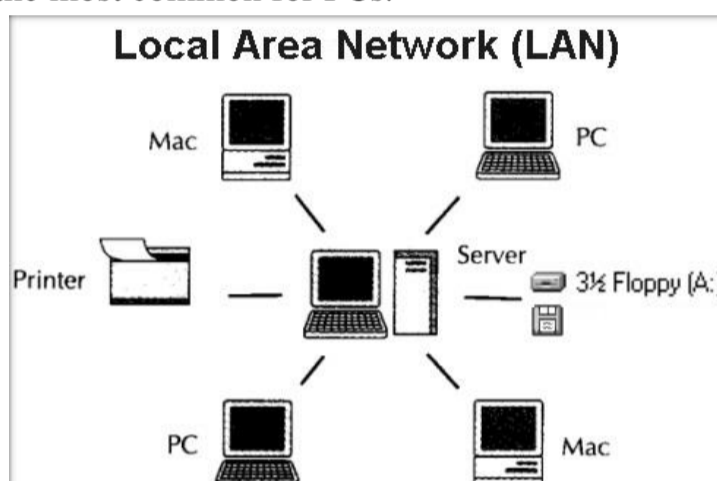
Taskbar: The taskbar is the long horizontal bar at the bottom of our screen. It is used to launch and monitor running applications. It has four main sections:

- ❖ The Start button which opens the start menu.
- ❖ The quick launch toolbar which allows you to open programs with a single click.
- ❖ The middle section allows you to see the documents and programs which you have opened and to switch between them.
- ❖ The notification area, which includes a clock and icons which shows the status of certain programs and computer settings.

3. (a) What are various components of a Local Area Network (LAN)? What are the advantages of using LANs? How are LAN different than WANs?

6

Answer: LAN is the most common type of network. LAN stands for local area network. It covers a small area. Most LANs are used to connect computers in a single building, campus, office or room etc. hundreds or thousands of computers may be connected through LAN. There are many types of LANs. Ethernet is the most common for PCs.



Components of a LAN Network:

- ❖ **Wiring:** Network cables connect all of the devices on your network to a central point, typically a switch or a hub.
- ❖ **Network Interface Cards:** Each networked device contains a Network Interface Card. The NIC may be a separate board installed into a computer’s slot, or it may be built into the motherboard.
- ❖ **Hubs:** A hub is the central wiring connector on a LAN, where all of the network cables come together. Each cable plugs into a port on the hub.
- ❖ **Switches:** A switch is like a hub in that it is a central point for connecting network cables; however, a switch is able to receive a packet and transmit it to only the destination computer.
- ❖ **Routers:** Network routers are essentially very smart switches because they know about other LANs, while switches only know about the network they are on.
- ❖ **Network Software:** All of the network components except the cabling have software that makes them work. Network software is written to a set of standards that define the TCP/IP protocol suite.

Uses and advantages of LAN

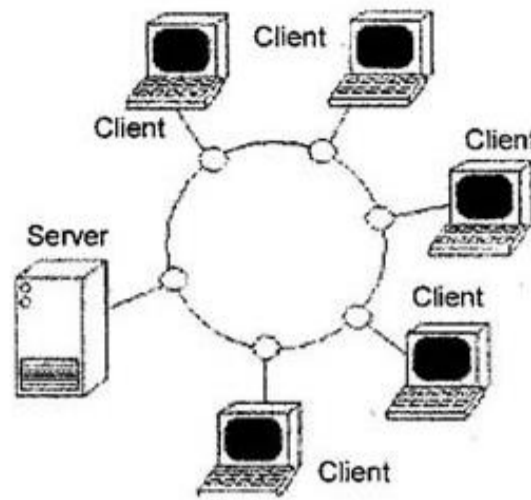
1. One copy of a software can be shared by all users in a LAN.
2. System resources such as printers can be shared between several people in network.
3. It is easy to manage the data stored on a centralized computer in the network.
4. The data is more secure from being copied or destroyed.
5. Data can be shared by all users using the network.

Difference Between LAN & WAN

Local Area Network (LAN)	Wide Area Network (WAN)
Local areas only (e.g., homes, offices, schools)	Large geographic areas (e.g., cities, states, nations)
LAN is a computer network covering a small geographic area, like a home, office, school, or group of buildings.	WAN is a computer network that covers a broad area (e.g., any network whose communications links cross metropolitan, regional, or national boundaries over a long distance).
High speed (1000 mbps)	Less speed (150 mbps)
LANs have a high data transfer rate.	WANs have a lower data transfer rate compared to LANs.
The network in an office building can be a LAN	The Internet is a good example of a WAN
Tend to use certain connectivity technologies, primarily Ethernet and Token Ring	WANs tend to use technologies like MPLS, ATM, Frame Relay

(b) Explain the ring topology with the help of a diagram. List the advantages and disadvantages of ring topology. 6

Answer: In Ring Topology, all the nodes are connected to each-other in such a way that they make a closed loop. Each workstation is connected to two other components on either side, and it communicates with these two adjacent neighbors. Data travels around the network, in one direction. Sending and receiving of data takes place by the help of TOKEN.



Advantages: -

- 1) This type of network topology is very organized. Each node gets to send the data when it receives an empty token. Also, in ring topology all the traffic flows in only one direction at very high speed.
- 2) Even when the load on the network increases, its performance is better than that of Bus topology.
- 3) There is no need for network server to control the connectivity between workstations.
- 4) Additional components do not affect the performance of network.
- 5) Each computer has equal access to resources.

Disadvantages: -

- 1) Each packet of data must pass through all the computers between source and destination. This makes it slower than Star topology.
- 2) If one workstation or port goes down, the entire network gets affected.
- 3) Network is highly dependent on the wire which connects different components.
- 4) MAU's and network cards are expensive as compared to Ethernet cards and hubs.

(c) Explain the following web application giving their features and advantages : 8

(i) E-learning

Answer: E-learning is one of the most used terms on the Internet that describes any form of learning that is facilitated academically by the electronic means. Such means may be in the form of multimedia rich contents, web-based lectures and web based tutorials or training programmes. In general, E-learning is strongly supported electronically by the administrative, academic and assessment processes.

Features: -

- ❖ Collaboration Of Various Learning Tools
- ❖ Virtual Learning Environment (VLE)
- ❖ Connectivity or networking
- ❖ Flexibility

Some advantages of E-learning are:

- ❖ It allows creation and fast update of online contents.
- ❖ You may use the contents at your own pace and convenience.
- ❖ E-learning also provides a possibility of standardization of contents that can be changed much faster.
- ❖ It has the potential of providing new learning opportunities.
- ❖ It has the possibility of student's interaction.
- ❖ Flexibility of programme/course management such as student may choose courses of their choices.
- ❖ Allows creative development of new courses in specific areas.
- ❖ E-learning brings people together and allows sharing their experience and thoughts.
- ❖ You can do an e-learning programme from anywhere in a much easier way.
- ❖ It allows expanding boundaries and gain knowledge without having to leave home.
- ❖ Overall, in general e-learning allows saving of resources.

(ii) E-mail

Answer: Email (Electronic Mail), it is the most popular communication system on the Internet. Email is a system that allows us to send messages from local computers to remote computers, be it on a home network or a worldwide network such as the Internet.

Features of email:

- automatic reply to messages
- auto-forward and redirection of messages
- facility to send copies of a message to many people
- automatic filing and retrieval of messages

- addresses can be stored in an address book and retrieved instantly
- notification if a message cannot be delivered
- emails are automatically date and time stamped
- signatures can be attached

Advantages

- ❖ Emails are delivered extremely fast when compared to traditional post.
- ❖ Emails can be sent 24 hours a day, 365 days a year.
- ❖ Webmail means emails can be sent and received from any computer, anywhere in the world, that has an internet connection.
- ❖ Cheap - when using broadband, each email sent is effectively free. Dial-up users are charged at local call rates but it only takes a few seconds (for conventional email, eg text only) to send an email.
- ❖ Emails can be sent to one person or several people.

4. (a) What is a Computer Virus ? What role can anti-virus software play to control a computer virus ? 4

Answer: A computer virus is a small program written with bad motive to affect badly the operation of a computer. Viruses are prepared by antisocial elements to damage other's computers, their important files etc. They may corrupt files, erase files, make a computer slow and so on.

To protect computer from viruses, anti-virus softwares are available. Before downloading any file from Web, it must be scanned whether it is free from viruses. When any file is to be copied from CD or floppy, it must be scanned. Most anti-virus programs use one of the following techniques to identify viruses:

1. Signature based detection
2. Heuristic-based detection
3. File emulation

(b) What are open source software ? What are the primary objectives of open source movement ? 4

Answer: Open-Source Software is a computer software which is available along with the source code and software license that permits the code to be studied, modified and improved. It is often developed in public and collaborative manner. Open-source development, follows the model of the bazaar.

In an open-source development model, roles are not clearly defined. The best features and functionality evolve into popular use much as good ideas evolve into popular use in the marketplace of ideas. Development is a collaborative process, resources are not scarce, and no one person or organization directs the project. The users are treated like co-developers and so they should have access to the source code of the software.

(c) What Graphical User Interface ? What are advantages of using these interfaces ? 4

Answer: Graphical User Interface (GUI): In icon (small graphical symbol) type user interface, the user tells the computer to carry out certain commands by pointing to an icon. Such user interface is also called **GUI**. A pointing device such as mouse can be used to point to an icon. Such system also provides a list of available commands called a **menu**. The user can point to a command in the menu. Today GUI is commonly used by most of the operating systems.

The OS system user interface provides a means for the user to get work done more quickly and efficiently. This is especially true for the user interface such as **menu**, icons found on modern operating systems. The modern operating systems combine **graphical user interface** simplicity with sophisticated text command input capability to provide the user with powerful access to the facilities of the computer.

(d) Explain the terms subroutine and function in the context of programming languages with the help of an example each. 5

Answer: The same statement in a program each time makes a program lengthy and reduces readability. These problems could be sorted out if the necessary statements could be written once and then referred to each time they are needed. This is the purpose of a subprogram. Basically, there are two different types of subprograms, called functions and subroutines.

Subroutine: A subroutine is a type of subprogram, a piece of code within a larger program that performs a specific task and is relatively independent of the remaining code. It is also called a procedure, routine or a method.

Example:

```
SUBROUTINE sub1(A,B,C, SUM)
    REAL A,B,C,SUM
    SUM = A + B + C
    RETURN
END
```

Function : The purpose of a function is to take in a number of values or arguments, do some calculations with those arguments and then return a single result. Example:

```
return value function name (argument list)
{
statement;
}
```

(e) What is meant by Macros in the context of spreadsheet software ? Why are they needed ?

3

Answer: A macro is a short program written using VBA that can be used to carry out a specific task. VBA is the language that Excel macros are written in. It is a programming language that is included with all of the Microsoft Office applications e.g. Word, Access, Power Point, Excel as well as others. The file extension of a macro is commonly .MAC.

The concept of macros is also well-known among MMORPG gamers (Massively Multiplayer Online Role-Playing Games) and SEO (Search Engine Optimization) specialists. In the world of programming, macros are programming scripts used by developers to re-use code. The term macro stands for “macro-instruction” (long instruction).

Help to Macro Our Computation Speed is Ultra Fast.

5. Discuss the uses of any eight of the following in a computer system/networking :

$$2\frac{1}{2} \times 8 = 20$$

(i) Firewall

Answer: Internet has many security problems like hacking, Trojan Horse, Virus, etc. There are various tools to provide protection against unwanted access of your computer by anyone else, but the most popular among all security measures is the firewall. Firewall is software that works on some set of rules and instructions given by we. A firewall helps to keep your computer more secure.

(ii) TCP/IP Protocol

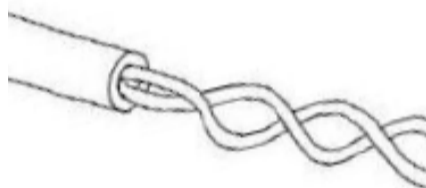
Answer: TCP/IP (Transmission Control Protocol/Internet Protocol): TCP works with IP. They are simply different layers of control. They work on both LANs and WANs. They provide error checking, flow control (to prevent swamping of an user by another faster or more powerful user), and status and synchronization control. TCP is a transport layer. IP is a network layer which handles routing and delivery.

(iii) Radio waves

Answer: Electromagnetic waves ranging in frequencies between 3 Kilo-Hertz and 1 Giga-Hertz are normally called radio waves. Radio waves are easy to generate and can travel long distances and can penetrate buildings easily, therefore widely used for communication. These are omni-directional which implies that these travel in all directions from the source, so the transmitter and receiver do not have to be carefully aligned physically.

(iv) Twisted Pair Cable

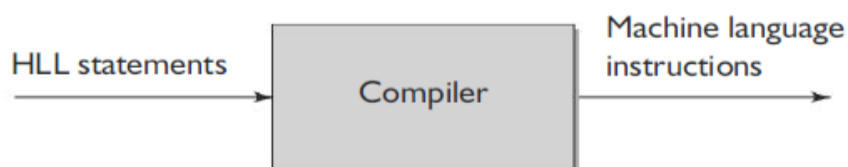
Answer: Twisted pair cable is still the most common transmission media. A twisted pair cable consists of two conductors which are normally made of copper. Each conductor has its own plastic insulation typically 1 mm thick. These cables are twisted together.



Twisted pairs are used for long distance connections e.g. telephone lines which are usually organized as larger cable containing numerous twisted pairs.

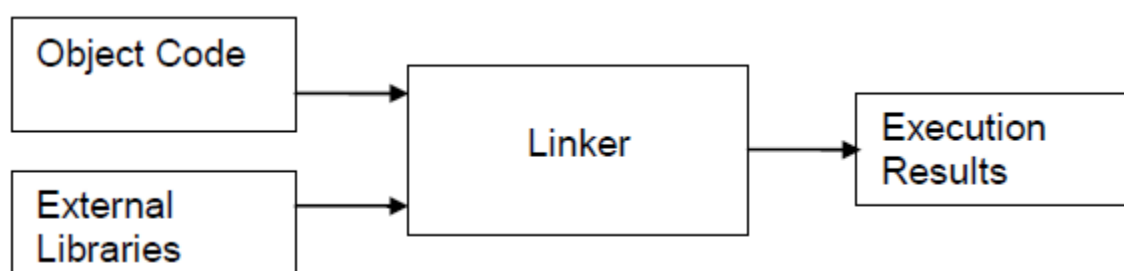
(v) Compiler

Answer: The compiler is a language translator which converts the high level language program into equivalent machine language program, consisting of instructions and binary numbers. A compiler is a larger program and occupies more memory space.



(vi) Linker

Answer: A linker is a program that links (combines) smaller programs to form a single program. While developing a program subroutines are frequently used. The subroutines are stored in a library file. The linker also links subroutines with the main program. The linker links machine codes of the programs.



(vii) Presentation Software

Answer: Like MS PowerPoint can be used to create and present slide show. It helps user to create interactive, self-running, or speaker-controlled visual displays. It uses multimedia technology to include text, photographs, drawing, graphs, video and audio clips in a presentation. Presentation created in PowerPoint can be used to accompany lectures or as the basis for Websites. PowerPoint can also be used to prepare 35 mm slides, overhead projections and printed handouts.

(viii) Database Management

Answer: Database management systems are software packages which permit users to work with records. A *database* consists of one or more related files. A *file* is a collection of records. A *record* consists of *fields* (or *data elements* or *data items*) about a given subject. A database management package allows users to create database. Users define data fields and make entry of fields into records.

Example: dBASE, MS-Access, ORACLE etc.

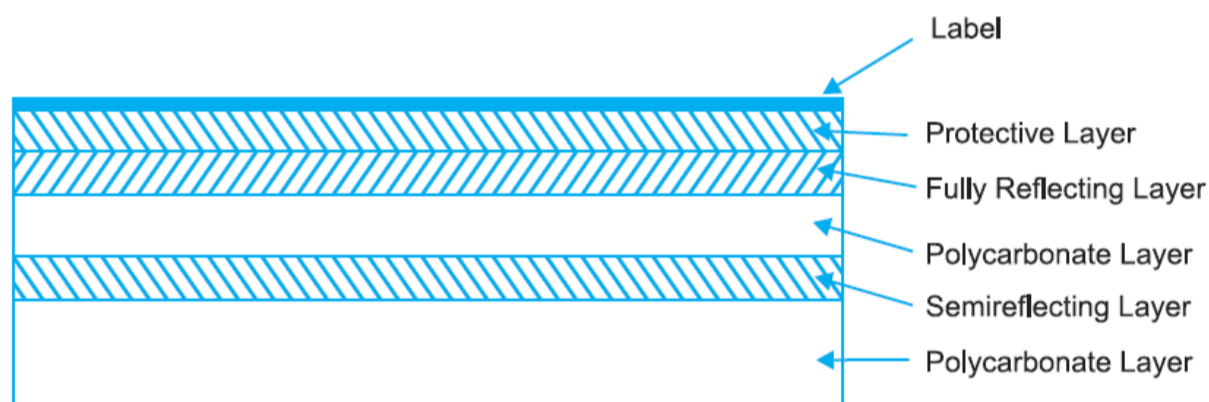
(ix) ASCII

Answer: ASCII is pronounced as “ask-ee”. It stands for **American Standard Code for Information Interchange**. ASCII code is used extensively in small computers, peripherals, instruments and communication devices. It has replaced many of the special codes that were previously used by manufacturers. It is a 7-bit code. Microcomputers using 8-bit word length use 7 bits to represent the basic code. The 8th bit is used for parity or it may be permanently 1 or 0. *Example,*

Characters	ASCII Hex codes	ASCII Decimal codes
A	41	65
B	42	66
C	43	67

(x) DVD

Answer: Digital Versatile Disks (DVD) have much more storage capacity as compared to CDs. They use laser beam of shorter wavelength as compared to the wavelength of laser beam used in CDs. Pits in DVDs are much smaller and tracks are placed closer together. This gives 4.7 GB storage capacity for a single layer single sided DVD. Double layer single sided disk has a capacity of 8.5 GB and double layer double sided disks have capacity 17 GB.



(xi) Mouse

Answer: A mouse is a device to move the cursor on the Monitor (video screen) of the computer at faster rate conveniently. Besides moving the cursor of the screen, certain operations are also performed by pressing buttons provided on the mouse. When a mouse is moved, its distance travelled and the direction is communicated to the screen by a microcontroller which is embedded into the mouse.



(xii) Bar code reader

Answer: This method uses a number of bars (lines) of varying thickness and spacing between them to indicate the desired information. Barcodes are used on most grocery items. An optical-bar reader can read such bars and convert them into electrical pulses to be processed by a computer. The most commonly used bar-code is universal product code (UPC). The UPC code uses a series of vertical bars of varying width.

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No. of Printed Pages : 6

BCS-011

BACHELOR OF COMPUTER APPLICATION (REVISED) (BCA)

Term-End Examination December, 2020

BCS-011 : COMPUTER BASICS AND PC SOFTWARE

Time : 3 Hours Maximum Mark : 100 Weightage : 75%

Note : Question No. 1 is compulsory and carries 40 marks. Attempt any three questions from the rest.

1. (a) Perform the following : 6
- (i) Convert the number $(16.25)_{10}$ to binary.
 - (ii) Convert the number $(1011\ 1010)_2$ to decimal.

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BCS-011

- (iii) Convert the number $(ABC)_{16}$ to binary.
- (iv) Convert the number $(110011\ 1001)_2$ to hexadecimal.
- (b) List the input/output devices for the following situations. Also describe the features of the device : 4
 - (i) For taking photographs
 - (ii) Producing output of photograph
 - (iii) Input of voice
 - (iv) Output of voice
- (c) What is the role of main memory in a Computer ? Why is it called RAM ? How is RAM different from ROM ? 4
- (d) You have attached a new printer to your computer. Which software will you require so that printer is installed correctly and starts to print. List features of the required computer software. 3

[5]

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4. (a) What is a Computer Virus ? What role can anti-virus software play to control a computer virus ? 4
- (b) What are open source software ? What are the primary objectives of open source movement ? 4
- (c) What Graphical User Interface ? What are advantages of using these interfaces ? 4
- (d) Explain the terms subroutine and function in the context of programming languages with the help of an example each. 5
- (e) What is meant by Macros in the context of spreadsheet software ? Why are they needed ? 3
5. Discuss the uses of any *eight* of the following in a computer system/networking : $2\frac{1}{2} \times 8 = 20$
- (i) Firewall
 - (ii) TCP/IP Protocol
 - (iii) Radio waves
 - (iv) Twisted Pair Cable

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- (e) Draw a flowchart for a program to find the average marks of the students of a class in a subject. The class strength is 15. 5
- (f) List *six* operations that can be performed using a word processor. 3
- (g) Explain the characteristics of hub and a router. Which of the two will be needed if you want to connect from one network to another ? 5
- (h) What is an IPv4 address ? What are its components ? What is the use of a subnet mask ? Explain with help of an example. 6
- (i) What is a Browser ? Why is it needed ? List any *two* features of a browser. 4
- 2. (a) What is the role of Arithmetic Logic Unit (ALU) and Control Unit (CU) in a computer ? 4
- (b) What is a Super Computer ? How is it different to mainframe computer ? 4

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- (v) Compiler
- (vi) Linker
- (vii) Presentation Software
- (viii) Database Management
- (ix) ASCII
- (x) DVD
- (xi) Mouse
- (xii) Bar code reader

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- (c) What are the uses of magnetic tape ? Explain, how is the access mechanism of magnetic tape different than that of magnetic disks. 4
- (d) Explain the terms pixel, resolution and LEDs in the context of computer monitors. 4
- (e) Explain the role of "Recycle Bin" and "Taskbar" on windows operating system. 4
- 3. (a) What are various components of a Local Area Network (LAN) ? What are the advantages of using LANs ? How are LAN different than WANs ? 6
- (b) Explain the ring topology with the help of a diagram. List the advantages and disadvantages of ring topology. 6
- (c) Explain the following web application giving their features and advantages : 8
 - (i) E-learning
 - (ii) E-mail

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