CLASS IX – COMPUTER SCIENCE

FUNDAMENTALS OF COMPUTERS

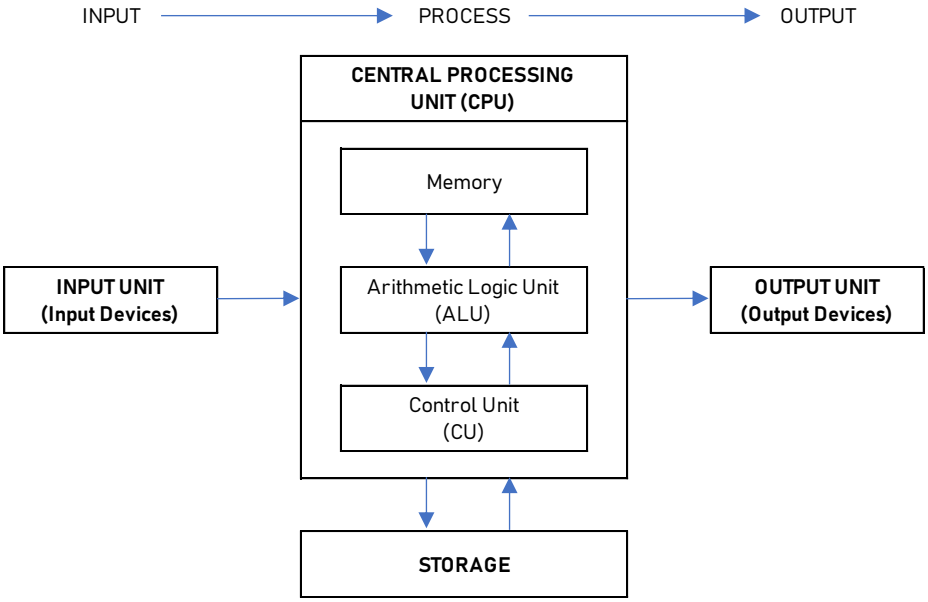
Section A: Theoretical Questions

1. What is a computer?
   Answer: A **Computer** is an electronic device, which can perform a variety of operations according to a set of instructions called **Programs**.

2. What is a computer program?
   Answer: A computer program is a set of instructions given to computer to perform some operation(s).

3. Discuss functioning of computer with suitable diagram and examples.
   Answer: A computer follows the IPO (Input, Process, Output) cycle, i.e., it needs certain input, carries out a process and produces the output.

   The diagram below shows the functioning of a computer.



- **Input Function** – Computer uses various input devices such as keyboard, mouse, scanner to take user's input and provide information to the computer.

- **Output Function** – Computer uses various output devices such as monitor, printer, speaker, etc. to display the data input to computer or the processed data in human readable form.

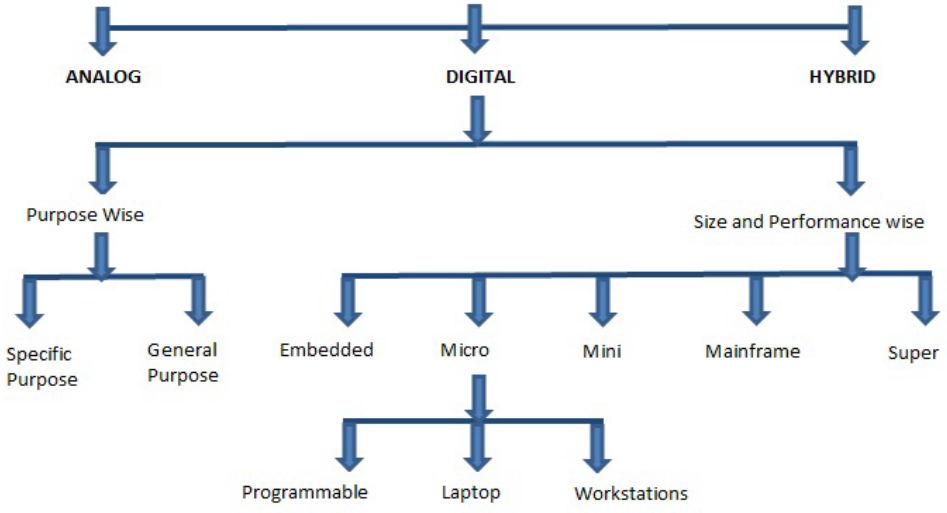
- **Storage Function** – it is responsible for storing any kind of information permanently and is performed by Storage Unit.

- **Processing Function** – This is function of computer where the data and information provided to the computer as input is processed, and the result is displayed on output unit. This function is carried out by Central Processing Unit (CPU) which have the following component:
  1. Arithmetic Logic Unit (ALU) – This unit performs arithmetic operations including addition, subtraction, multiplication and division and logic operations involving comparisons such as less than, greater than, or equal to.
  2. Control Unit (CU) – The control unit directs the computer to carry out, or execute, stored program instructions. The CPU performs following four steps in executing an instruction:
     (i) The CU gets the instruction from memory.
     (ii) The CU decides what the instruction means and directs the necessary data to be moved from the memory to the arithmetic logic unit.
     (iii) The arithmetic logic unit performs the actual operation on the data.
     (iv) The result of the operation is stored in memory.

4. Discuss characteristics of a computer (it's strengths and weaknesses).
   Answer: The following are the strengths of computer:
   a) **Speed**: A computer computes problems much faster than a human being.
   b) **High storage capacity**: Using different kinds of storage devices, it can store huge quantities of data over long periods of time.
   c) **Accuracy**: With the high computation speed, computers are able to produce accurate results. If the input is valid, only then correct output will be produced as computers follows GIGO i.e., Garbage in Garbage out principle.
   d) **Reliability**: Computers are immune to tiredness and boredom or fatigue. Thus, they are more reliable than human being.
   e) **Versatility**: It can perform different types of tasks with the same ease. At one moment you can use the computer to prepare a letter document and in the next moment you may play music or print a document.

   The following are the weaknesses of computer:
   a) **Lack of decision-making power**: Unlike humans, computer do not possess the power of decision-making.
   b) **IQ Zero**: It is programmed to carry out tasks and performs exactly as instructed, since it has no intelligence of its own.
   c) **No Heuristics**: As computer is a dumb machine, thus it never ever learns from its past experiences.

5. Discuss the various types of computers.
   Answer:
   CLASSIFICATION OF COMPUTERS:
   Depending upon the ways the data can be handled, computers are basically classified into three categories i.e., Analog, Digital and Hybrid. The digital computers can further be categorized based on their purpose, size, and performance. The exhaustive classification tree of computers can be defined as shown in above diagram.



Types of computers according to the data they handle or process

a) **Analog Computers**: are those computers in which data or number is represented in the form of continuously varying physical quantities such as pressure, temperature, voltage, current etc.
   Analog computers measure things.
   Application areas: Speedometer of a car, Gasoline pump etc
b) **Digital Computers**: are those computers that solves problems by operating on discrete data (numeric data) representing variables by performing arithmetic and logical processes on data from a stored program.
   Digital computers count things.
   Application areas: home, educational institutions, office, scientific fields, business etc.
c) **Hybrid Computers**: are analog computers controlled by digital computers instead of human beings.
   Application areas: Hospitals, Meteorology Department etc

Types of Digital computers according to their purpose

a) **Special purpose computers**: They are designed to do single specific task. The programs or instructions to carry out the specific task are permanently stored in the machine. For example, computer for military application or purpose, computers at billing counter in malls etc.
b) **General purpose computers**: They are designed to solve wide variety of problems having different set of inputs. For example, computers for banking, sales analysis etc.

Types of Digital computers according to the size and performance

a) **Embedded computers**: are designed to be used within the circuitry of appliances such as television, washing machine, refrigerator, bike etc
b) **Microcomputers**: are designed to be used by single user for performing basic operations like educational activities, playing games. These are mainly used in homes, offices, shops, school etc.
   Microcomputers have the following three basic categories
   - *Programmable Computers or Personal Digital Assistant or PDA*: are designed to carry out day to day task related to sharing or exchange of information by connecting to desktop computers regardless of location. They are used as notepads and address book.
   - *Laptop or Desktop or Notebook or Personal Computers*: are designed to carry out our day-to-day personal task. They are used in business and at home.
   - *Workstations*: are similar to personal computers but have greater memory and processing capabilities. They are generally used in industrial, business and in scientific environment that require high levels of computational abilities.
c) **Minicomputers**: are more powerful computers than microcomputers in terms of processing power and capabilities. They are generally multi-user systems.
d) **Mainframe computers**: are designed to handle large volumes of data and information. They are multi-user and multi-processors systems.
e) **Super computers**: are designed to be used for doing extremely complicated computations, that also in minimum possible time. They are the fastest, the largest and most expensive digital computers available today. They are best used in Weather forecasting, Nuclear Science, Aerodynamic modelling etc.

6. Why is binary language often termed as machine language? Why is machine language required?
Answer: A computer (the machine) operates on electricity. thus, it can understand only electricity signals that are just two ON and OFF or high voltage or low voltage. Thus, it needs a language that uses just two unique symbols to represent these two states of electricity.
Therefore, a computer works on machine language. the binary language is often termed as machine language as it fulfils the condition of using two unique symbols to represent state of electricity.

7. Which component of a computer system executes the program and how?
Answer: CPU of a computer system executes the program, and it is executed in the following manner:
a) When a program reaches into memory, the control unit (CU) of CPU reads the program instruction.
b) The CU then determine the type of instructions, i.e., whether it is an arithmetic (calculation) or logical (comparison) or I/O (Input/Output) (reading or writing) type of instruction.
c) For arithmetic or logical type of instructions, CU directs the ALU (Arithmetic and Logic Unit) to carry out the instructions.
d) For input type of instructions, CU directs the input unit to carry out the instruction and for output type of instruction, it directs the output unit to carry out the instructions.

8. Describe the relationship that exists between a computer's processor and its memory.
Answer: Whatever is to be processed by a computer, whether that is data or instruction is first loaded into internal memory before the processor can process it.
A processor can take data or instructions from internal memory only. Also, even after processing, the processed data is first stored into internal memory and then it is redirected to the output unit.
Therefore, the relationship of computer's processor and its internal memory can be summarised as:
"Whatever need to be processed (whether data or instructions) has to go via *internal memory*" hence internal memory is crucial for carrying out operations on a computer.

9. Discuss various input devices.
Answer: The following are the various input devices:
a) **KEYBOARD** – is most basic input device comprising keys and each key denotes either an alphabet, number, character, or functions which can be given to a computer for various actions to be performed. QWERTY is the most used keyboard drawing its' name from top six letters of the keyboard.
b) **MOUSE** – is a hand-held pointing device that detects two-dimensional motion relative to a surface. This motion is typically translated into the motion of a pointer on a display, which allows a smooth control of the graphical user interface of a computer.
c) **MICROPHONE** – is an input device which is used by users for sound input to computer. It takes in the sound signals and then convert them into digital form.
d) **SCANNER** – is a device that is used for converting printed documents or photos into electronic formats. It captures pictures and text from a paper and makes a digital copy which can then be edited, saved for later. The following are the various types of scanners:
   - **Hand-held scanners** are very small and can be held in hand.
   - **Flatbed scanners**, usually larger and expensive have flat surface on which printed image or document to be scanned is placed.
   - **Drum scanner** is medium sized scanner where the sheet is fed and the drum rolls over the entire sheet to be scanned.
e) **MAGNETIC INK CHARACTER READER (MICR)** – is a device used to read characters printed in special font using magnetic ink. For example, banks use MICR to process cheques. Such cheques contain codes written in special magnetic link.
f) **TOUCH SCREEN** – Generally used in smart phones or mini laptops where there would not space for keyboard or keypad, a touch screen is a computer screen that can be used by touching it with a finger or a stylus pen, instead of using a mouse and keyboard. It can be described as a touchpad with a screen built-in to it. A touchscreen serves the purpose of both input and output unit.
g) **BAR CODE READER** – is a reading device to read barcode data like on goods, books, etc. It can be a handheld scanner or a stationary one but they both scan the image by converting it to alphanumeric value on the computer.
h) **QR CODE READER** – is much like bar code reader, except that QR (Quick Response) reader read QR code which is two-dimensional printed representation of data that can be scanned for data retrieval.

10. Discuss various output devices.
Answer: The following are the various output devices:
a) **MONITOR**: Also called as Visual Display Unit (VDU), Monitors are used to display information in form of text and graphics from the computer. The visuals are made up of thousands of tiny, coloured dots known as pixels. The pixels decide the image sharpness.
Different types of monitors:
   - **Cathode Ray Tube (CRT)**: is a vacuum tube containing one or more electron guns, which emit electron beams that are manipulated to display images on a phosphorescent screen. CRT monitors works in same way as traditional television. The major disadvantage of such a monitor is that it is bulky in size and power consumption is high.
   - **Liquid-crystal display (LCD)** is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in colour or monochrome.
   - **Plasma Monitors**: The plasma technology utilizes small cells containing electrically charged ionized gases across the face of plasma display, to collectively form a visual image. They are less popular due to their high price, weight, high power consumption.
   - **Touchscreen Monitors**: Generally used in smart phones or mini laptops where there would not space for keyboard or keypad, a touch screen is a computer screen that can be used by touching it with a finger or a stylus pen, instead of using a mouse and keyboard. It can be described as a touchpad with a screen built-in to it. A touchscreen serves the purpose of both input and output unit.
   - **Organic Light Emitting Display (OLED) Monitors**: Extremely thin and light OLED monitors are created from pushing an electronic current through organic materials, causing these materials to glow. By manipulating the materials and the electric current, the glow can be made to be of desired colour.
b) **PRINTERS**: The primary feature is to print information on paper. There are two types of printers:
   - **Impact Printers**: are those where there is mechanical contact between the print head and paper. Most common impact printer is Dot Matrix Printer.
   - **Non-impact Printers** are those where there is mechanical contact between the print head and paper. They come in variety of forms such as electromagnetic printers, thermal printers, electrostatic printers, inkjet printers and laser printers. They are *high speed*, *cost effective* and *better print quality* printers.
c) **SPEAKERS**: An output device that produces sound after receiving a command from the computer. They support the computers as well as other hardware devices.
d) **PROJECTOR**: This is an optical device that presents visuals on the screen, both stationery and motion. It connects to the computer and displays the image on it on a larger screen.
e) **PLOTTER**: is used to create drawings on paper. There are two types of plotters:
   a. **Pen Plotter** is an electromagnetic device where a pen is moved in two dimensions (up/down and left/right) across a paper or film media to create output.
   b. **Photo Plotter** uses fibre optics technology to produce the image on dry silver paper.

11. What role do Input unit and Output unit play in a computer system? Discuss two popular input and two popular output devices.
Answer: The input unit is responsible for accepting input i.e., data and instructions from the user with the help of input devices. Some of the input devices are keyboard and mouse.
The output unit is responsible for producing the output in user readable form. Various output devices like monitor and printer.
For second part of question, please refer to the answer of Q. No. 9 and 10.

12. Describe the functioning of CPU.
Answer: Please refer to the answer of Q. No. 3, 7 & 8

13. How important is control unit in a computer system?
Answer: Please refer to the answer of Q. No. 3 & 7

14. What is a memory? Compare and contrast primary and secondary memory.
Answer: **Memory** is the internal storage area, which holds the data and instructions during processing.
Primary memory is temporary holds data and instructions during processing. *Also known as Main Memory or Internal Memory*.
Secondary memory store data (files, etc.) permanently for later use. *Also known as Auxiliary Memory or External Memory or Storage*.

Primary Memory	Secondary Memory
Memory is directly connected to and accessed by a computer's CPU.	Not directly connected to a CPU.
Memory is volatile (RAM)	Non volatile
Direct access by CPU	Indirect access by CPU
Faster data access	Slower data access

Used for processing data	Used for storing data
Small size	Large size

15. What is the function of memory? What are it's measuring unit?
Answer: The memory temporarily holds the data and information during processing.
The smallest unit of memory is a *byte* (8 bits). A byte can store one character in binary form. Other measuring units are:

Unit	Short Name	Full Name
1 Bit	Bit	Binary Digit
8 Bits	1 Bytes	Byte
2^{10} i.e., 1024 Bytes	1 KB	Kilo Byte
2^{10} i.e., 1024 KB	1 MB	Mega Byte
2^{10} i.e., 1024 MB	1 GB	Giga Byte
2^{10} i.e., 1024 GB	1 TB	Tera Byte
2^{10} i.e., 1024 TB	1 PB	Peta Byte
2^{10} i.e., 1024 PB	1 EB	Exa Byte

16. Differentiate between RAM and ROM. OR Name and discuss two types of internal memory.
Answer: The following are the differences between RAM and ROM:

	RAM	ROM
Full Name	Random Access Memory	Read Only Memory
Definition	RAM is a form of data storage that can be accessed randomly at any time in any order.	ROM is also a form of data storage that generally stores hardwired instructions (instructions stored as a form of circuits) for the computer to start initially.
Alterations	RAM contents can be changed or altered as and when required.	ROM cannot be easily altered or reprogrammed.
Use	RAM allows the computer to read data quickly to run applications.	ROM stores the program required to initially boot the computer or reboot the computer.
Operations supported	It allows reading and writing.	It only allows reading.
Volatility	RAM is volatile, i.e., its content is lost when the device is powered off.	It is non-volatile, i.e., its content is retained even when the device is powered off.
Size	Larger than ROM; can be up to some Giga Bytes (GBs).	Smaller, but large enough to hold basic instructions; is up to some Mega Bytes (MBs)
Speed	RAM chips can read data faster than ROM.	ROM is slower as compared to RAM.

17. What is a cache memory? Why is it required?
Answer: To speed up the operations of the CPU, high-speed memory known as cache memory is placed between the CPU and the primary memory. It holds the data, instructions or programs which are most frequently used by CPU. When the CPU needs some data, it first examines the cache. In case the requirement is met, it is read from the cache, otherwise the primary memory is accessed.

18. What are the limitations of internal memory (primary memory)?

OR

Why is external memory (storage or secondary memory) is required in a computer system?
Answer: The internal memory has the following limitations:
a) limited capacity
b) temporary or volatile in nature
To overcome these limitations, the external storage is required.

19. Describe at least two ways in which storage (i.e., external memory) complements (internal memory).
Answer:
a) Memory has limited capacity where is storage capacity is many more times as compared to memory.
b) Memory is volatile and storage is permanent. That is, data in memory is lost when power goes off but in storage the data remains there even after the power goes off.

20. Discuss various Storage Devices (Secondary Memory Devices).
Answer: The following are the various storage devices:

Device Name	Type	Description	Sizes available (as of 2022)
Floppy disk	Magnetic	A Floppy disk is made up of a plastic cartridge and secures with a protective case. *Nowadays floppy disk is replaced by new and effective storage devices like USB, etc.*	1.44 MB
Hard disk (HDD)	Magnetic	It is a set of stacked disks, just like phonograph records. In every hard disk, the data is recorded electromagnetically in the concentric circles, or we can say track present on the hard disk, and with the help of a head fixed in a position to read the information present on the track. The read-write speed of HDDs is not so fast but decent.	A few TBs. Latest known HDD is 24 TB as of April 2022.
Compact Disc (CD)	Optical	It contains tracks and sectors on its surface to store data. It is made up of polycarbonate plastic and is circular in shape. • **CD-R** (Compact Disc Read-Only) – Once the data is written cannot be erased. It is read-only. • **CD-RW** (Compact Disc Read Write) – One can easily write or erase data multiple times.	700 MB
Digital Versatile Disc (DVD)	Optical	Circular flat optical discs used to store data. Looks like CDs but the storage capacity more as compared to CDs. It is of two types: • DVD-R: It stands for Digital Versatile Disc read-only. In this type of DVD, once the data is written cannot be erased. It is read-only. It is generally used to write movies, etc. • DVD-RW: It stands for Digital Versatile Disc read Write. In this type of DVD, you can easily write or erase data multiple times.	Single layer –4.7 GB Double layer – 8.5 GB A DVD, also called a Super Density disk (SD) can hold up to 17 GB of data.

Blu-ray Disc	Optical	It is successor to DVD. The technology uses blue laser which reads from and writes to the disc rather than red laser of DVD. A blue laser writes more data compared to red laser of DVDs.	Commonly available – 25/50 GB Special triple layer – 100 GB
Pen Drive	Flash memory	Also known as a USB flash drive that includes flash memory with an integrated USB interface. We can directly connect these devices to our computers and laptops and read/write data into them in a much faster and efficient way. These devices are very portable. Flash is a 'Solid State' memory, i.e., it has neither moving parts unlike magnetic storage device nor does it make use of lasers as in optical storage.	Up to 1 TB
Memory Stick	Flash memory	Generally used in digital cameras. printers, game consoles, etc. It is also used to store large amounts of data and is available in different sizes.	Up to 1 TB
Solid State Drive (SSD)	Flash memory	A storage device containing non-volatile flash memory, used in place of a hard disk because of its much greater speed. They provide better performance and reliability over hard disc drive (HDD).	Up to 8 TB

21. Why is SSD preferred over HDD?
Answer: **SSD** or **Solid-State Drive** is a storage device containing non-volatile flash memory, used in place of a hard disk because of its much greater speed. They provide better performance and reliability over hard disc drive (HDD).

22. What is Cloud Storage?
Answer: **Cloud storage** backs up your files to a secure server across the Internet. It has become practical as Internet speeds have increased and is convenient as it can often be fully automated. The Cloud storage is a mechanism not a physical storage device, although data is stored is server's physical storage.

23. Differentiate between **hardware** and **software**.
Answer: **Hardware** represents the physical and tangible components of the computer i.e., the components that can be seen and touched. Input devices, output devices, CPU, hard disk, CD, DVD, etc. are examples of computer hardware.
Software represents the set of programs that govern the operation of a computer system and make the hardware run.

24. What are various categories of software? OR How can computer software be classified?
Answer: There are broadly two categories of software:
a) **Systems Software**: This type of software controls internal computer operations. The system software can further be classified into two categories:
   i) Operating System: It is a program which acts as an interface between a user and the hardware.
   ii) Language Processor: This program is responsible for converting a high-level language code (HLL code) into machine understandable code.
   iii) Utility Programs: These are responsible for performing housekeeping jobs like defragmenting disc, cleaning virus, etc.
b) **Application Software:** An application software is a set of programs necessary to carry out operations for a specified application.

25. List some of the tasks performed by Operating System.
Answer: An operating system performs mainly following tasks:
a) Provides user interface
b) Controls hardware
c) Assigns memory
d) Handles application
e) Handles/manages devices

26. What is a computer language? Discuss classifications of computer languages.
Answer: A **computer language** is used for giving instructions to the computer to perform a particular task. The sequence of instruction written using a computer language forms a computer program.
Computer languages can be classified into three broad categories as:
a) **Machine Language**: Machine language is a low-level programming language made of binary numbers or bits that can only be read by machines. It is also known as machine code or object code, in which instructions are executed directly by the CPU. Machine language includes binary digits (0s and 1s), hexadecimal and octal decimal, which can be comprehended only by computers and cannot be deciphered by humans.
b) **Assembly language**: Assembly language is a human-only language that is not understood by computers. As a result, it acts as a link between high-level programming languages and machine languages, requiring the usage of an assembler to convert instructions into machine or object code. It is easier to write programs in assembly language compared to machine language.
c) **High level language (HLL)**: It is a language in which programs are written using English words and mathematical symbols. HLL programs are machine independent and portable. It is easy for programmers for learn and develop programs in HLL.
   HLL programs cannot be directly understood by computer. They have to be translated into their equivalent machine language form so that they can be executed by computer. Translators used for converting HLL program into machine language are known as compilers or interpreters.
   Examples of HLL are BASIC, C, C++, Java, Python.

27. What is assembler, interpreter, and complier?
Answer: Assembler is a program for converting programs written in low-level assembly language into machine language.
For interpreter and compiler, please refer to the answer to next question.

28. What is the difference between an interpreter and a complier?
Answer: An interpreter converts an HLL (high-level language) program into machine language line by line and simultaneously executes the converted line. Also, an interpreter must always be present in the memory along with the program for its execution. If an error occurs in a line, the line is displayed, and interpreter does not proceed unless the error is rectified.
A compiler converts an HLL (high-level language) program in machine language in one go. If there are errors in the program it gives the error list along with the line number. Once the errors are removed, error free object code is made available and after this compiler is no more needed in the memory.

29. What is application software? Why is it required?
Answer: Application software is a software that pertains to one application.

Application software is required because system software cannot carry out the routine jobs performed by the user which application software can easily do. To perform various kinds of activities, the application software comes in various categories:

a) Packages b) Specialized c) Customized Software

30. What is a customized software? Discuss advantages and disadvantages of a customized software.

Answer: This type of software is tailor-made software according to a user's requirement. This type of software is developed to meet all the requirements specified by the users. This is also known as **tailor-made** or **bespoke** software

Advantages:

- The company will get the exact software/system that they need.
- The software will work exactly how they want it to work.
- The software will only have the features that they specifically need in their business.

Disadvantages:

- It takes a long time to develop such a system between a few months to years.
- It cost a great deal of money to develop such a system.
- The company may need to employ a team of people such as business analyst, programmers, testers, etc.
- There will be little in the way of user support and online help.
- This cannot be directly installed at other user's workplace as requirement may vary.

31. What are packages & specialized software in application software?

Answer: General application software are known as **Packages**. Most common categories of packages are word processors (example, MS Word), spreadsheets (example, MS Excel), desktop publishing software, database management system (DBMS) (example, MS Access, Oracle), graphics, multimedia, and presentation software (example, MS PowerPoint).

Specialised software are designed to be used for specific task example financial accounting, payroll, library management, etc.

32. What features of word processors make them very useful?

Answer: Apart from performing the jobs of typewriters, word processor provides following features that enhance their usefulness:

a) Word processors provide variety of fonts and printing styles.
b) Information can be saved for later use.
c) Word processors provide the facility of spell check, dictionary, and thesaurus.
d) Word processors offers various formatting style that enhance the presentability of a document.
e) Word processors offer very useful utility known as mail merge.

33. What features of electronic spreadsheets make them very useful?

Answer: Various useful features of electronic spreadsheet are:

a) Spreadsheets cannot only represent data values but also their relationship(s).
b) Spreadsheets provides facilities of cut, paste, move, copy data values or formulae or formats etc.
c) What if analysis becomes very easy using spreadsheets.
d) Numerous built-in functions are available in spreadsheets.
e) Data can graphically be represented charts / graphs of many types.

34. What is a DBMS?

Answer: DBMS (Database Management System) is a software that can effectively store, manipulate and handle bulk of data. A DBMS provides utility for data analysis and data-based management.

35. What is system software? What role does it play in the functioning of the computer?

Answer: Please refer to the answer of Q. No. 24.

36. Write brief note on Presentation Software?

Answer: The software that can create professional looking visual aids is called presentation graphics software.

a) These programs are used to create professional looking visual aid for an audience. The visual aids can be computer images, paper printouts, or photographic transparencies.
b) They provide predefined background and sample page layouts to assist in the creation of computer driven slide shows in combination with a data projector.
c) Navigation from page to page (slide to slide) can be done manually or automatically every so many seconds.

37. What is utility software? Discuss some of the important utilities.

Answer: **Utilities** are those application program that assist the computer by performing house-keeping functions like backing up disc or scanning/cleaning viruses, etc. Some important utilities are being discussed below:

a) **Disk/folder/file management software**: This utility software is a programme to organise and keep track of files and is better known as file management software or simply File Manager.
b) **Antivirus Software (Virus Scanner/Cleaner)**: A computer virus is a computer program that can infect other computer programs by modifying them in such a way as to include a copy of itself. A virus not only copies itself but also make the computer system behaves abnormally.
An antivirus software scans your disc for viruses and remove them, if any viruses found. Moreover, some antivirus software remains present in memory all the time so that they can detect the viruses (as soon as they occur) and counterattack them.
Some popular antivirus software are Norton Antivirus, McAfee Antivirus, Quick Heal, Avast, etc.
c) **Encryption/Decryption Software**: Encryption refers to the conversion of electronic data into another form, encrypted form called **ciphertext** which cannot be easily understood by anyone except authorised parties. **Ciphertext** is a term used to refer to altered data (using an algorithm) to make the data unintelligible to unauthorised user. The primary purpose of encryption is to protect the confidentiality of digital data stored on computer system or transmitted via Internet or other computer networks.
Decryption is the opposite of encryption, i.e., converting ciphertext to original form using correct key.
Some popular encryption/decryption software are LastPass, BitLocker, Vera crypt, 7zip, Symantec Endpoint Encryption, etc.

Section B: Multiple Choice Questions

1. The physical components of the computer system are called
   a. Software b. Hardware c. Firmware d. Liveware
2. The program or instruction that tells the computer what to do are known as
   a. Software b. Hardware c. Firmware d. Liveware
3. Which one of the devices is called a brain of a computer system?
   a. CPU b. CD-ROM c. Mouse d. Scanner
4. The part of a computer that allow the user to view information on the screen:
   a. Mouse b. RAM c. CPU d. Monitor
5. This part sends signals to other parts of the computer to tell them what to do:
   a. CPU b. Keyboard c. Mouse d. Hard disk
6. This memory is for short term storage and is lost when the computer is turned off:
   a. ROM b. CPU c. Hard Disk d. RAM
7. This part allows the user to hear information from the computer:
   a. Monitor b. Software c. Input d. Speaker
8. Another name for all the parts of a computer:
   a. Process b. Hardware c. Monitor d. Software
9. This part stores data, programs, settings, and the operating system while the computer is off. While it is on it spins inside the computer reading and writing data:
   a. CPU b. ROM c. RAM d. Hard Disk
10. Which of the following components of the CPU uses electricl signals to direct the various parts of the computer system to carry out or execute, stored program or instructions?
    a. ALU b. CU c. Memory unit d. ROM
11. A collection of eight bit is called
    a. Byte b. Word c. Record d. File
12. Which of the following is an example of non-volatile memory?
    a. ROM b. RAM c. LSI d. VLSI
13. Which of the following is a unit of measurement used with computer system?
    a. Byte b. Megabyte c. Gigabyte d. All the above
14. Which of the following statement is true?
    a. Secondary storage is non-volatile
    b. Primary storage is volatile
    c. When the computer is turned off, data and instructions stored in primary storage are erased.
    d. None of the above.
15. Which of the following is not a feature of RAM?
    a. RAM is volatile
    b. Information can be written onto and read from RAM.
    c. RAM stores a special piece of software called BIOS.
    d. The size of RAM installed in a computer decides the number of programs that the system can run simultaneously.
16. Dot Matrix is a type of:
    a. Tape b. Disk c. Printer d. Bus
17. The secondary storage device can only store data, but it cannot perform:
    a. arithmetic operation b. logic operation c. fetch operation d. either of the above
18. Which of the following does not represent an Input/Output (I/O) device?
    a. Speaker which beeps b. Plotter c. Joystick d. ALU
19. Which of the following is a correct definition of volatile memory?
    a. It loses its contents at high temperatures b. It must be kept in airtight boxes
    c. It loses its content on failure of power supply d. It does not lose its content on power failure.
20. One thousand bytes represents a
    a. Megabyte b. Gigabyte c. Kilobyte d. None of the above
21. The concentric circles on the floppy disc are further divided into:
    a. Tracks b. Sectors c. Cylinder d. None of the above
22. Which of the following storage device can be used for storing large backup data?
    a. Floppy Disk b. Hard Disk c. Magnetic Tapes d. None of the above
23. What does storage unit provide?
    a. A place to show data b. A place to store currently worked on information
    c. A place to store information d. A place to process data
24. What are the four basic components of a computer?
    a. input devices, output devices, printing and typing
    b. input devices, processing unit, storage, and output devices
    c. input devices, CPU, output devices and RAM
    d. Input devices, printer, flash memory, monitor
25. What are examples of storage devices?
    a. keyboards flash drives, printer b. flash drive, RAM, DVD-ROM
    c. Hard drive, DVD ROM, flash drive d. Mouse, flash drives, printer
26. What kind of information can be found in a ROM?
    a. Software b. The operating system
    c. Basic Input/Output system d. Media files
27. In computer terminology, a compiler means
    a. a person who computes source program
    b. the same thing as a programmer
    c. a key puncher operator
    d. a program which translates high level language program to machine language
28. The primary job of the operating system of a computer is to:
    a. command resources b. be user friendly c. provide utilities d. All the above
29. The operating system of a computer serves as a software interface between the user and
    a. Hardware b. Peripheral c. Memory d. Screen
30. The term “operating system” refers to
    a. a set of programs which controls computer working

b. the way a computer operator works
c. conversion of high-level language into machine code
d. the way a floppy disk drive operates

31. Operating System is
a. a collection of hardware components b. a collection of input output devices
c. a collection of software routines d. all the above

32. Operating system
a. links a program with subroutine it references b. provide a layered, user-friendly interface
c. enable the programmer to draw a flow-chart d. all the above

33. Which of the following is an example of computer software?
a. Impact printer b. Console c. Payroll package d. OCR

34. Which type of software is designed to perform specific personal, business, or scientific processing tasks?
a. System b. Applications c. GUI d. Computer

35. Which software takes control of computer system on startup?
a. Compiler b. Operating system c. Application software d. All of these

Section C: Fill in the blanks

1. Computer _____ are the physical parts that makes up a computer system. They are the parts that you can see and touch.
2. _____ is used to provide instructions to the computer so that it can perform certain tasks.
3. _____ are the raw facts from which _____ is derived.
4. The _____ directs other components of the computer to perform the task specified in the program instructions.
5. Collecting the data and converting it into information is called _____.
6. Results are obtained from computer through its _____ unit.
7. _____ is the most powerful computer.
8. Computers are _____ than human beings.
9. Computers are _____ to tiredness and _____.
10. Computers have _____ IQ.
11. There are two basic types of disk drive, _____ disk drives and flash drives.
12. Printed copy is often called _____.
13. _____ printers do not use physical impact to transfer characters to paper.
14. No mechanical contact is required between the print head and the paper in case of _____ printers.
15. A device that is used for converting printed documents or photos into electronic format is called a _____.
16. A _____ is an input device usually on a laptop and works by sensing the user's finger movement and the applied pressure.
17. _____ is used in banks to read the code on cheques written using magnetic ink.
18. _____ is a device used to read characters printed in a special font using magnetic ink.
19. _____ is an impact printer whereas _____ is a non-impact printer.
20. A _____ is used to capture image and store them in a digital format.
21. _____ is the main circuit board of a computer which holds the components like CPU, RAM, and ROM, is connected to the other components of the computer through connectors and slots.
22. Data representation in a computer use the _____ number system.
23. The CPU is made up of two smaller components: the _____ or _____ and the _____ or the _____.
24. The binary system uses the symbol _____ and _____.
25. The digits of the binary system are called _____.
26. A unit of 8-bit memory cell groups is called a _____.
27. A KB in computer terminology is equal to _____ bytes.
28. The most familiar output device for the microcomputer is the _____.
29. The four functional components of a digital computer are: input device, _____, _____, and output devices
30. Internal storage is also called main _____.
31. Instructions to computer are given through _____.
32. Calculations are made in computer with the help of its _____ or _____.
33. _____ is used for storing a special piece of software known as BIOS.
34. _____ is faster than RAM.
35. The term bit stands for _____.
36. A unit of measure equal to approximately 1 billion bytes is called _____.
37. Control Unit is called the _____ of the computer.
38. The program designed to govern the computer hardware system are called the _____.
39. Software designed for a specific application such as pay calculations; processing of examinations result etc. are known as _____.

Section D: True & False

1. The CPU can store data for a long period of time. [ ]
2. The CPU is known as the 'brain' of the computer. [ ]
3. The speed of a CPU is measured in Megabytes or Gigabytes [ ]
4. A typical CPU speed of the CPU would be around 3 GHz. [ ]
5. Increasing the speed of the CPU will improve the performance of the computer [ ]
6. RAM is known as 'volatile' memory. [ ]
7. RAM stores data and application modules whilst you are working on them [ ]
8. Increasing the RAM will increase the performance of a computer [ ]
9. Closing documents & applications when you have finished with them will improve the speed of a computer [ ]

ANSWERS

Section B: Multiple Choice Questions

1)	b	2)	a	3)	a	4)	d	5)	a	6)	d	7)	d	8)	b	9)	d	10)	b
11)	a	12)	a	13)	d	14)	d	15)	c	16)	c	17)	d	18)	d	19)	c	20)	c
21)	b	22)	c	23)	c	24)	b	25)	c	26)	c	27)	d	28)		29)	a	30)	a
31)	c	32)	b	33)	c	34)	b	35)	b										

Section C: Fill in the blanks

1)	hardware, touch	2)	Software	3)	Data, information	4)	control unit
5)	processing	6)	output	7)	Supercomputer	8)	faster
9)	immune, boredom	10)	zero	11)	hard	12)	hard copy
13)	Non-impact	14)	non-impact	15)	scanner	16)	touchpad
17)	Magnetic Ink Character Recognition (MICR)			18)	Magnetic Ink Character Recognition (MICR)		
19)	Dot-matrix, laser	20)	digital camera	21)	Motherboard	22)	binary
23)	ALU, Arithmetic Logic Unit, CU, Control Unit			24)	0, 1	25)	bits
26)	byte	27)	1024	28)	monitor	29)	CPU, memory
30)	memory	31)	input devices (or input unit)				
32)	ALU, Arithmetic Logic Unit			33)	Read only memory (ROM)		
34)	Cache memory	35)	binary digits	36)	1 GB or 1 Gigabyte		
37)	Nerve centre or brain			38)	System software		
39)	Application software						

Section D: True & False

1)	FALSE	2)	TRUE	3)	FALSE	4)	TRUE
5)	TRUE	6)	TRUE	7)	TRUE	8)	TRUE
9)	TRUE						