**Question Bank**

**Unit I**

1. What is a computer? With a neat diagram, discuss the organization of a computer (5) 2+1+2
2. Elaborate the different components of computer hardware

Ans: The different components of computer hardware are:

1. Memory:

* Internal storage area in the computer which is used to store data either temporarily or permanently.
* While the main or primary memory stores the data when a program is executing, the auxiliary or secondary memory stores data that are not currently in use and provides long term storage.
* Primary memory is volatile and can retain data only when power is on.
* RAM (Random Access Memory) and ROM (Read Only Memory) are two types of primary memory.
* RAM is volatile and stores temporary data.
* Types of RAM are
  + SRAM (Static RAM), holds data without an external refresh as long as it is powered.
  + DRAM (Dynamic RAM), contains millions of tiny cells each made of capacitor and transistor. If charge is present in the capacitor, the reading is 1 else it is 0.
* ROM is non-volatile and data is retained even after the computer is turned off.
* Types of ROM are PROM (programmable ROM), EPROM (Erasable programmable ROM) and EEPROM (Electrically EPROM). The process of writing an EEPROM is called flashing.

2. Disks:

* Hard drive is a part of the computer that stores all the programs and files, so if in any case the drive is damaged, all the files are lost.
* Hard disk is a set of disks stacked together like phonographic records, that has data recorded electromagnetically in concentric circles called tracks.
* The performance of hard disk depends on its access time, which is the time required to read or write on the disk.
* Access time is a combination of 3 components:
  + Seek time: time taken to position the R/W head over the appropriate cylinder.
  + Rotational delay: time taken to bring the target sector to rotate under the R/W head.
  + Transfer time: time to transfer data or R/W to a disk.
* Access time = seek time + rotational delay + transfer time
* Disk latency (time taken to initiate a transfer) = seek time + rotational delay

3. Processor:

* It contains 2 main parts, ALU (Arithmetic and logical unit) and CU (Control unit). Besides these, there are also registers, execution unit, and bus interface unit.
* Execution unit = CU +ALU + registors
  + CU: to direct and coordinate the computer organisations.
  + ALU: performs arithmetic, comparison and other operations.
* Resistor is a computer memory that provides quick access to the data currently being used for processing.

4. Peripheral devices/ I/O devices

1. Write a note on Bus Interface Unit in detail

* Ans: BIU provides functions for transferring data between the execution unit of the CPU and the other components of the computer system that lie outside the CPU.
* Every computer system ahs 3 different types of buses to carry info from one part to another. They are control bus, data bus and address bus.
* BIU puts the contents of the program counter on the address bus. The content of the program counter is the next instruction to be executed. Once the memory receives an address from the BIU, it places the contents of that address on the data bus, which is then transferred to the IR of the processor through the MBR. Then the contents of the program counter are modified so that it now stores the next set of instructions.

1. Write a short note on Input/Output Devices

Ans:

* To accomplish tasks, a computer must be able to interact with its users. For this purpose, we need input and output devices.
* They are also called peripheral devices.
* Each input and output devices have its own function differentiating it from the others.
* i/p devices, used to feed data and instructions into the computer.
  + Keyboard, pointing devices, handheld devices, optical devices, audio/video input devices.
* o/p devices, gives info from the computer. They are electromechanical devices which accept digital data from computer and convert them to human understandable language.
  + Soft copy devices, produce electronic version of output. Monitor, projector, speaker.
  + Hard copy devices, produce a physical form of output. Printer.

1. Explain system software in detail

Ans:

1. Give the differences between application software and system software
2. Whis is an operating system? Give examples
3. List and explain the function of BIOS
4. Explain Compiler, Interpreter, Linker, and Loader
5. With a neat diagram elaborate the process of design and implementation of efficient software programs
6. What are the different Program design tools available? Explain
7. What is an algorithm? What are its characteristics
8. Discuss the importance of flowchart in detail
9. What are the different shapes used in designing a flowchart? Give examples
10. Explain a pseudocode
11. Give the differences between pseudocode and algorithm
12. Write an algorithm to find whether the given year is leap or not
13. Draw a flowchart to find whether th person is eligible to Vote or not
14. Draw a flowchart to print the multiplication table of N (N should be an user input)
15. Write a pseudocode to swap two numbers

**Note : Practice different examples for writing algorithm, pseudocode and drawing flowchart. Questions 17-20 are only Example problems**

**Unit II**

1. List and explain the different features of C
2. Justify why C is considered as a Middle Level Language
3. Explain the structure of a C program with an example
4. List and explain any 5 header files with example
5. How do we compile and run a C Program
6. Give the differences between Compile Error and Runtime Error
7. Elaborate C Tokens in detail
8. What is an identifier? List the different rules to define an identifier. Give examples
9. Write a short note on the basic data types in C
10. Give the range and size of different data types in C
11. Write a program to print the message “Welcome to RV” in C
12. Write a program to perform (i) add (ii) Subtract (iii)multiply and (iv) divide two numeric variables and display the output in C

**[Similar simple programs to be practiced]**

1. Discuss the (i) Arithmetic (ii)Logical and (iii)Relational operators in C with Example
2. Explain the working of bitwise operators in detail
3. Explain operator precedence in detail
4. With example any five-escape sequence characters that help to format the output in C
5. What is typecasting and how is it useful?
6. How do type conversion work in C ? Give an example
7. Explain increment and decrement operators in C with relevant example
8. What is role of local and global variables in C? Give examples

**Unit III**

1. Give the differences between sequence control, decision control and looping control statements. Give example.
2. Elaborate the working of If-Else statement in C with syntax and Example
3. Explain the if-else ladder with an example
4. What is a ternary operator? Give example
5. Give the differences between if-else and switch case
6. With relevant example give the differences between do-while and while loop
7. Discuss the role of goto, continue and break and detail
8. What are the different looping structures in C? Give examples
9. Summarize the differences between Entry controlled and Exit controlled loop
10. Explain the working of nested for loop in detail
11. Define an array? How do you declare and initialize a one-dimensional array in C?
12. Explain the working of two-dimensional arrays with an example

**# Relevant programming examples to be practised**