9th Computer Science and Entrepreneurship
Unit 1 - Introduction to Systems (Short Questions)

Q1. Define a system. What are its basic components

A system is a group of related components that work together to perform a specific function. All the components of a system are interconnected, and each component performs a specific task.

The basic components of a system are:

- Input Unit

- Processing Unit

- Output Unit

Q2. What is meant by Systems Theory?

Systems theory is the study of how different components of a system work together. It helps us to understand how the components of a system are interconnected and how they depend on each other.

Q3. How can systems be classified?

Systems exist everywhere and they can be classified into natural systems and artificial systems.

A system can be:

- A natural system, such as human body

- A physical system, such as a car

- A process, such as university admission system

- An abstract concept, such as a mathematical formula

Q4. Name properties of a system's environment.

The properties of a system's environment are:

- Static

- Dynamic

- Deterministic

- Non-Deterministic

Q5. What is the static property of a system's environment?

Static property means the system remains unchanged unless the system provides an output. There are no changes occurring in the environment while the system is working internally.

Example: A timetable (changes only when updated).

Q6. What is the dynamic property of a system's environment?

Dynamic property means the environment can change independently of the system's output.

Example: Weather conditions.

Q7. What is the Deterministic property of a system's environment?

Deterministic property means the impact of system's output on the environment is fully known and certain.

Example: Calculator (5 + 3 = 8 always).

Q8. What is the Non-Deterministic property of a system's environment?

Non-Deterministic property means the impact of system's output on the environment is random and uncertain.

Example: Exam performance (same study effort, but results may vary).

Q9. How many types of systems are there?

There are 2 types of systems:

1. **Natural Systems:** These systems are naturally created and operate independently without human involvement.
   For example: Solar System

2. **Artificial Systems:** These systems are created and developed by humans so they can solve specific problems or fulfil specific purposes.
   For example: Electricity Network

Q10. What are the main types of science?

Science is the study of the world around us. Science can be divided into two main types:

- Natural Science

- Design Science

Q11. What is the difference between natural and artificial science?

Natural Science

- The purpose of natural science is to study existing natural systems in the natural world to understand their objectives and workings.

- In natural science, scientists follow the empirical cycle.

Design Science

- The purpose of design science is to design and create new systems (artifacts) to solve various problems and achieve specific goals.

- In design science, scientists follow the regulative cycle.

Q12. What is computer science?

Computer science is the study of computers. It includes how they work, what they can do, and their limitations. To understand computer science, we use methods from both natural science and design science.

Q13. Define computer as a system.

A computer is a complex system that processes data and performs various tasks according to a set of given instructions.

Q14. Describe the main components of a computer system.

The main components of a computer system are **hardware** and **software**.

- **Hardware:** These are physical parts of a computer system, such as system unit, CPU, storage devices, input devices, and output devices.

- **Software:** These are computer programs, such as operating systems and application softwares.

Q15. What are the communication components of a computer system?

Interface components are used to communicate with the computer. Using these components, we provide input to the computer and receive output from it.

Examples: Mouse, Keyboard, and Printer.

Q16. What are the processing components of a computer system?

The processing components of a computer system work together to process data. They consist of hardware and software components.

Examples: CPU, RAM, and Operating System.

Q17. What are the communication components of a computer system?

The communication components of a computer system provide communication between different components inside the computer.

Examples: Motherboard and System Buses.

Q18. What is Von Neumann computer architecture? List its key components.

The Von Neumann architecture is a computer model that describes how a computer works.

Key Components:

- CPU

- Memory

- Input Devices

- Output Devices

Q19. What are the four main stages in the Von Neumann architecture instruction cycle?

The four main stages in the Von Neumann architecture instruction cycle are:

1. Fetching

2. Decoding

3. Executing

4. Storing

Q20. What are three main requirements for a computing system to function?

Three main requirements for a computing system to function are:

1. **Hardware**

2. **Software**

3. **Power Source** (Electricity or Battery etc.)