

BT-205 Basic Computer Engineering Unit–1 Notes

UNIT–1 TOPICS

- Definition of Computer
- Classification of Computer
- Organization of Computer
- CPU, Registers and Bus Architecture
- Instruction Set
- Memory and Storage Systems
- Input and Output Devices
- System and Application Software
- Computer Applications
- Operating System
- Functions and Types of Operating System
- File, Process and Memory Management
- MS Word
- MS PowerPoint
- MS Excel

1. COMPUTER

Computer is electronic device used to accept data, process it and produce meaningful information.

Characteristics of Computer:

- High speed
- Accuracy
- Automation
- Large storage capacity
- Reliability

2. CLASSIFICATION OF COMPUTER

(a) Based on Working Principle

- Analog Computer
- Digital Computer
- Hybrid Computer

(b) Based on Size

- Micro Computer
- Mini Computer
- Mainframe Computer
- Super Computer

3. ORGANIZATION OF COMPUTER

Computer organization describes functional units of computer and their interaction.

Main Components:

- Input Unit
- Central Processing Unit (CPU)
- Memory Unit
- Output Unit

Block Diagram:

Input → CPU → Memory → Output

4. CENTRAL PROCESSING UNIT (CPU)

CPU is brain of computer.

Main Parts of CPU:

- Arithmetic Logic Unit (ALU)
- Control Unit (CU)
- Registers

Functions of CPU:

- Arithmetic operations
- Logical operations
- Control of system activities

5. REGISTERS

Registers are small high-speed storage locations inside CPU.

Types of Registers:

- Accumulator
- Program Counter
- Instruction Register
- Memory Address Register

6. BUS ARCHITECTURE

Bus is communication pathway connecting computer components.

Types of Bus:

- Data Bus
- Address Bus
- Control Bus

7. INSTRUCTION SET

Instruction set is collection of commands used by CPU.

Types of Instructions:

- Data transfer instructions
- Arithmetic instructions
- Logical instructions
- Control instructions

8. MEMORY SYSTEM

Memory stores data and instructions.

Types of Memory:

(a) Primary Memory

- RAM
- ROM

(b) Secondary Memory

- Hard Disk
- CD/DVD
- Pen Drive

9. STORAGE SYSTEM

Storage devices permanently store data.

Examples:

- SSD
- Hard Disk
- Optical Disk

10. INPUT DEVICES

Input devices are used to enter data into computer.

Examples:

- Keyboard
- Mouse
- Scanner
- Microphone

11. OUTPUT DEVICES

Output devices display processed results.

Examples:

- Monitor
- Printer
- Speaker
- Projector

12. SOFTWARE

Software is collection of programs and instructions.

(a) System Software

Controls computer hardware and system operations.

Examples:

- Operating System
- Compiler

(b) Application Software

Used for specific user tasks.

Examples:

- MS Word
- Excel
- Photoshop

13. COMPUTER APPLICATIONS

(a) E-Business

Online buying and selling activities.

(b) Bio-Informatics

Use of computers in biological research.

(c) Health Care

Patient records, diagnosis and medical imaging.

(d) Remote Sensing & GIS

Used for mapping and geographical analysis.

(e) Meteorology and Climatology

Weather forecasting and climate analysis.

(f) Computer Gaming

Game design and simulation.

(g) Multimedia and Animation

Graphics, videos and animation creation.

14. OPERATING SYSTEM (OS)

Operating system is system software that manages hardware and software resources.

Functions of Operating System:

- Process management
- Memory management
- File management
- Device management
- Security management

Types of Operating System:

- Batch OS
- Time-sharing OS
- Real-time OS
- Distributed OS
- Network OS

15. FILE MANAGEMENT

File management organizes files and folders.

Functions:

- File creation
- File deletion
- File storage

16. PROCESS MANAGEMENT

Process management handles execution of programs.

Functions:

- Process scheduling
- Process synchronization
- Deadlock handling

17. MEMORY MANAGEMENT

Memory management controls allocation of memory to programs.

Functions:

- Memory allocation
- Memory protection
- Virtual memory management

18. MS WORD

MS Word is word processing software.

Features:

- Document creation
- Formatting
- Tables and images

19. MS POWERPOINT

MS PowerPoint is presentation software.

Features:

- Slide creation
- Animations
- Charts and multimedia

20. MS EXCEL

MS Excel is spreadsheet software.

Features:

- Data calculations
- Charts and graphs
- Functions and formulas

MOST IMPORTANT 14 MARK QUESTIONS

1. Explain classification and organization of computer.
2. Explain CPU, registers and bus architecture.
3. Explain memory and storage systems.
4. Explain input and output devices with examples.
5. Explain system software and application software.
6. Explain computer applications in different fields.
7. Explain operating system and its functions.
8. Explain types of operating systems.
9. Explain file, process and memory management.
10. Explain features and applications of MS Word, PowerPoint and Excel.

IMPORTANT 7 MARK QUESTIONS

1. Define computer.
2. Explain analog, digital and hybrid computers.
3. Explain CPU and ALU.
4. Explain RAM and ROM.
5. Explain data bus and address bus.
6. Explain operating system.
7. Explain MS Excel features.
8. Explain process management.

EXAM TIPS

- Draw neat block diagrams of computer organization.
- Learn definitions carefully.
- Revise operating system functions regularly.
- Practice memory classification properly.
- Focus on repeated PYQ topics.