Shree Sathyam
College of Engineering and Technology

CS25C06-DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

IMPORTANT 1 MARK QUESTION

UNIT-I

1.Which gate is called a universal gate?

a) AND

b) OR

c) NAND

d) XOR

Answer: c) NAND

2.Binary equivalent of decimal 15 is:

a) 1010

b) 1111

c) 1101

d) 1001

Answer: b) 1111

3.De Morgan's theorem is used for:

a) Simplification

b) Multiplication

c) Division

d) Storage

Answer: a) Simplification

4.Which gate gives output 1 when inputs are different?

a) AND

b) OR

c) XOR

d) NAND

Answer: c) XOR

5.Boolean algebra deals with:

a) Decimal numbers

b) Binary variables

c) Fractions

d) Graphs

Answer: b) Binary variables

6.K-Map is used for:

a) Memory storage

b) Simplification

c) Encoding

d) Counting

Answer: b) Simplification

7.The output of NOT gate is:

a) Same input

b) Complement of input

c) Sum

d) Product

Answer: b) Complement of input

8.Hexadecimal number system has base:

a) 2

b) 8

c) 10

d) 16

Answer: d) 16

9.Which gate is known as inverter?

a) OR

b) NOT

c) NAND

d) XOR

Answer: b) NOT

10.SOP stands for:

a) Sum of Products

b) Series of Products

c) Sum of Process

d) Standard Output Process

Answer: a) Sum of Products

UNIT-II

1.The brain of computer is:

a) RAM

b) CPU

c) ROM

d) HDD

Answer: b) CPU

2.Von Neumann architecture uses:

a) Separate memory

b) Single memory

c) No memory

d) Cache only

Answer: b) Single memory

3.Harvard architecture uses:

a) Same memory

b) Separate memory

c) ROM only

d) RAM only

Answer: b) Separate memory

4.MIPS stands for:

a) Million Instructions Per Second

b) Memory Instructions Per Second

c) Machine Input Process System

d) Million Input Process Speed

Answer: a) Million Instructions Per Second

5.CPI means:

a) Cycles Per Instruction

b) Count Per Instruction

c) Central Process Instruction

d) Computer Performance Index

Answer: a) Cycles Per Instruction

6.Which unit performs arithmetic operations?

a) CU

b) ALU

c) RAM

d) ROM

Answer: b) ALU

7.Input devices are used to:

a) Store data

b) Enter data

c) Print data

d) Delete data

Answer: b) Enter data

8.Output devices are used to:

a) Display results

b) Store results

c) Process results

d) Encode results

Answer: a) Display results

9.MFLOPS stands for:

a) Million Floating Point Operations Per Second

b) Memory Floating Operations

c) Main Floating Point System

d) Machine Floating Process

Answer: a) Million Floating Point Operations Per Second

10.The control unit controls:

a) Arithmetic operations

b) Entire computer operations

c) Memory only

d) Output only

Answer: b) Entire computer operations

UNIT-III

1.Half adder adds:

a) Three bits

b) Two bits

c) Four bits

d) One bit

Answer: b) Two bits

2.Full adder adds:

a) One bit

b) Two bits

c) Three bits

d) Four bits

Answer: c) Three bits

3.Multiplexer is also called:

a) Data selector

b) Data storage

c) Data adder

d) Data divider

Answer: a) Data selector

4.Flip-flop stores:

a) 1 bit

b) 2 bits

c) 4 bits

d) 8 bits

Answer: a) 1 bit

5.Decoder converts:

a) Binary to decimal

b) Decimal to binary

c) Analog to digital

d) Digital to analog

Answer: a) Binary to decimal

6.Registers are used to:

a) Store temporary data

b) Print data

c) Delete data

d) Encode data

Answer: a) Store temporary data

7.Sequential circuits contain:

a) Memory

b) No memory

c) Printer

d) Scanner

Answer: a) Memory

8.Booth's algorithm is used for:

a) Addition

b) Multiplication

c) Division

d) Subtraction

Answer: b) Multiplication

9.Counter is a:

a) Sequential circuit

b) Combinational circuit

c) Logic gate

d) Memory unit

Answer: a) Sequential circuit

10.Parallel adder is used for:

a) Fast addition

b) Fast multiplication

c) Fast storage

d) Fast transfer

Answer: a) Fast addition

UNIT-IV

1.RISC stands for:

a) Reduced Instruction Set Computer

b) Random Instruction System Computer

c) Register Instruction System Control

d) Reduced Integrated System Computer

Answer: a) Reduced Instruction Set Computer

2.CISC stands for:

a) Complex Instruction Set Computer

b) Computer Instruction System Control

c) Central Integrated System Computer

d) Complex Integrated Storage Computer

Answer: a) Complex Instruction Set Computer

3.Pipelining improves:

a) Speed

b) Size

c) Cost

d) Weight

Answer: a) Speed

4.Structural hazard occurs due to:

a) Resource conflict

b) Data conflict

c) Memory loss

d) Register loss

Answer: a) Resource conflict

5.SIMD stands for:

a) Single Instruction Multiple Data

b) Single Input Multiple Device

c) System Instruction Main Data

d) Serial Instruction Multiple Data

Answer: a) Single Instruction Multiple Data

6.Addressing mode specifies:

a) Operand location

b) Memory size

c) CPU speed

d) Cache size

Answer: a) Operand location

7.Superscalar processors execute:

a) One instruction

b) Multiple instructions

c) No instruction

d) Memory instruction

Answer: b) Multiple instructions

8.Pipeline hazard affects:

a) Performance

b) Storage

c) Display

d) Input

Answer: a) Performance

9.Vector processors are used for:

a) Scientific calculations

b) Printing

c) Storage

d) Scanning

Answer: a) Scientific calculations

10.Hardwired control unit is:

a) Faster

b) Slower

c) Larger

d) External

Answer: a) Faster

UNIT-V

1.Cache memory is:

a) Fast memory

b) Slow memory

c) External memory

d) Optical memory

Answer: a) Fast memory

2.RAM is:

a) Volatile

b) Non-volatile

c) Permanent

d) Secondary

Answer: a) Volatile

3.ROM stands for:

a) Read Only Memory

b) Random Output Memory

c) Read Output Mode

d) Register Output Memory

Answer: a) Read Only Memory

4.EEPROM can be:

a) Electrically erased

b) Printed

c) Heated

d) Locked

Answer: a) Electrically erased

5.HDD is a:

a) Secondary storage

b) Primary memory

c) Register

d) Cache

Answer: a) Secondary storage

6.SSD stands for:

a) Solid State Drive

b) Secondary Storage Device

c) System State Drive

d) Serial Storage Drive

Answer: a) Solid State Drive

7.DMA stands for:

a) Direct Memory Access

b) Data Memory Access

c) Dynamic Memory Allocation

d) Direct Machine Access

Answer: a) Direct Memory Access

8.Cache replacement policy is used in:

a) Cache memory

b) RAM

c) ROM

d) HDD

Answer: a) Cache memory

9.ECC is used for:

a) Error correction

b) Multiplication

c) Division

d) Storage

Answer: a) Error correction

10.Main memory directly communicates with:

a) CPU

b) Printer

c) Keyboard

d) Scanner

Answer: a) CPU

UNIT-VI

1.USB is an example of:

a) Interface standard

b) Memory

c) Register

d) Cache

Answer: a) Interface standard

2.PCI stands for:

a) Peripheral Component Interconnect

b) Primary Computer Interface

c) Program Control Interface

d) Peripheral Central Interface

Answer: a) Peripheral Component Interconnect

3.SATA is mainly used for:

a) Storage devices

b) Printers

c) Monitors

d) Registers

Answer: a) Storage devices

4.Interrupt driven I/O improves:

a) CPU efficiency

b) Storage

c) Weight

d) Cost

Answer: a) CPU efficiency

5.DMA transfers data between:

a) Memory and I/O device

b) CPU and monitor

c) Register and ALU

d) ROM and cache

Answer: a) Memory and I/O device

6.Bus arbitration is used to:

a) Control bus access

b) Store data

c) Print data

d) Encode data

Answer: a) Control bus access

7.Interrupt is a:

a) Signal

b) Memory

c) Register

d) Gate

Answer: a) Signal

8.Programmed I/O needs:

a) CPU involvement

b) No CPU involvement

c) Cache only

d) ROM only

Answer: a) CPU involvement

9.Peripheral devices are connected through:

a) Interfaces

b) Gates

c) Registers

d) Counters

Answer: a) Interfaces

10.Bus is used for:

a) Data transfer

b) Data printing

c) Data deletion

d) Data scanning

Answer: a) Data transfer

3 MARK QUESTION

Unit I – Digital Logic

1. Explain Boolean algebra and its basic laws.
2. State and explain De Morgan's theorem.
3. Simplify Boolean expressions using K-Map.
4. Explain SOP and POS forms.
5. Differentiate combinational and sequential circuits.
6. Explain the working of NAND and NOR gates.
7. Draw and explain XOR and XNOR gates.
8. Convert decimal numbers into binary and hexadecimal.
9. Explain canonical forms in Boolean algebra.
10. Write short notes on universal gates.
11. Explain the importance of truth tables.
12. Differentiate binary, octal, decimal, and hexadecimal systems.
13. Explain Gray code and BCD code.

14. Write short notes on integrated circuits.

15. Explain implementation of logic gates.

Unit II – Computer System

1. Draw and explain the functional units of a computer.
2. Differentiate Von Neumann and Harvard architecture.
3. Explain instruction execution cycle.
4. Define MIPS, MFLOPS, and CPI.
5. Explain the role of CPU in computer systems.
6. Write short notes on ALU.
7. Explain the functions of control unit.
8. Describe memory unit functions.
9. Explain input and output units.
10. Differentiate hardware and software.
11. Explain computer performance metrics.
12. Write notes on interconnection of components.
13. Explain the basic structure of a computer.
14. Describe classes of computers.
15. Explain fetch and execute cycle.

Unit III – Arithmetic and Logic Unit

1. Explain Half Adder with truth table.
2. Explain Full Adder with logic diagram.

3. Differentiate combinational and sequential circuits.
4. Explain multiplexers and their applications.
5. Explain decoder with neat diagram.
6. Write short notes on binary parallel adder.
7. Explain Booth's multiplication algorithm.
8. Explain floating point representation.
9. Describe flip-flops and their types.
10. Explain registers and their functions.
11. Explain counters and their applications.
12. Differentiate synchronous and asynchronous counters.
13. Explain integer division process.
14. Explain fast multiplication techniques.
15. Write short notes on sequential circuits.

Unit IV – Processing and Pipelining

1. Differentiate RISC and CISC architectures.
2. Explain pipelining and its advantages.
3. What are pipeline hazards?
4. Explain structural hazards.
5. Explain data hazards.
6. Explain control hazards.
7. Describe instruction level parallelism.

8. Explain SIMD and MIMD architectures.
9. Write short notes on superscalar processors.
10. Explain vector processors.
11. Describe array processors.
12. Explain hardwired control unit.
13. Explain microprogrammed control unit.
14. Explain addressing modes.
15. Draw and explain pipeline stages.

Unit V – Memory

1. Explain memory hierarchy.
2. Differentiate SRAM and DRAM.
3. Explain cache memory and its need.
4. Explain cache replacement policies.
5. Differentiate RAM and ROM.
6. Explain PROM, EPROM, and EEPROM.
7. Write short notes on SSD and HDD.
8. Explain secondary storage devices.
9. Describe cache organization.
10. Explain NUMA architecture.
11. Write notes on DMA.
12. Explain ECC and its importance.

13. Differentiate primary and secondary memory.

14. Explain characteristics of cache memory.

15. Explain main memory organization.

Unit VI – I/O Systems

1. Explain programmed I/O technique.
2. Explain interrupt driven I/O.
3. Explain DMA data transfer.
4. Differentiate programmed I/O and DMA.
5. Explain USB interface standard.
6. Write short notes on PCI.
7. Explain SATA interface.
8. Explain interrupt types.
9. Describe priority interrupt handling.
10. Explain bus arbitration.
11. Write notes on peripheral communication.
12. Explain I/O interfaces.
13. Differentiate serial and parallel communication.
14. Explain peripheral devices.
15. Describe data transfer techniques in I/O systems.

12 MARK QUESTIONS

Unit I – Digital Logic

1. Explain Boolean algebra laws and De Morgan's theorem with examples.
2. Simplify Boolean expressions using K-Map technique.
3. Draw and explain all logic gates with truth tables.
4. Explain SOP and POS forms with suitable examples.
5. Explain universal gates and implementation of logic functions using NAND and NOR gates.

Unit II – Computer System

1. Explain the basic structure and functional units of a computer with neat diagram.
2. Compare Von Neumann architecture and Harvard architecture.
3. Explain instruction execution cycle in detail.
4. Explain performance metrics such as MIPS, MFLOPS, and CPI.
5. Describe the interconnection of computer components.

Unit III – Arithmetic and Logic Unit

1. Explain Half Adder and Full Adder with truth tables and logic diagrams.
2. Explain multiplexers and decoders with applications.
3. Explain Booth's multiplication algorithm with example.
4. Explain flip-flops, registers, and counters with neat diagrams.
5. Explain floating point representation and operations.

Unit IV – Processing and Pipelining

1. Compare RISC and CISC architectures in detail.
2. Explain pipelining with pipeline stages and timing diagram.
3. Explain pipeline hazards and methods to overcome them.
4. Explain SIMD and MIMD architectures.
5. Explain hardwired and microprogrammed control units.

Unit V – Memory

1. Explain memory hierarchy with neat diagram.
2. Explain cache memory organization and mapping techniques.
3. Differentiate RAM, ROM, PROM, EPROM, and EEPROM.
4. Explain cache replacement policies.
5. Explain DMA and ECC with suitable diagrams.

Unit VI – I/O Systems

1. Explain programmed I/O, interrupt driven I/O, and DMA techniques.
2. Explain interrupt types and priority handling.
3. Explain buses and bus arbitration.
4. Explain PCI, USB, and SATA interface standards.
5. Explain peripheral communication and I/O interfaces.