Nizam College (Autonomous)
Faculty of Science
B.SC. I- Semester Examinations, January - 2023
Computer Hardware : Paper – I
(Digital Circuits Combination Logic)

Time : 3 Hours

Max. Marks : 80

Section – A

I. Answer any EIGHT of the following questions. [8 x 4 = 32]

1. Describe Binary Number System.
2. Convert 723_{10} to Hexadecimal number.
3. What is Gray Code?
4. What are universal gates?
5. State and explain Norton's Theorem.
6. What is product of Sums method?
7. What are Data processing circuits?
8. Differentiate between Full Adder and Half Adder
9. Disuse different types of memories.
10. What is T-Flip-Flop?
11. Write about J-K Flip Flop.
12. Explain about Asynchronous Counter.

Section – B

II. Answer the following questions using internal choice. [4 x 12 = 48]

13. (a) State and prove maximum power transfer theorem and explain its applications.

[OR]

(b) Write a short note on Resistors and colour coding.

14. (a) Simplify the given Boolean function with karnaugh map
Y=$\sum$(0,1,2,3,4,5,8,9,10,11,12).

[OR]

(b) Explain the working of a priority encoder with a diagram.

15. (a) What is ROM and RAM? Write about applications of RAM.

[OR]

(b) Illustrate about 1's Complement and 2's Complement Arithmetic.

16. (a) Explain the operation of a synchronous counter.

[OR]

(b) What is race around condition? How it will be solved using J-K masters lave J-K Flip Flop.

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Time : 3 Hours

Max. Marks : 80

Section – A

I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. With the help of neat diagram explain the super position theorem?
2. What about ASCII and Gray code.?
3. Explain about the colour coding method for measuring the resistance of a Resistor.
4. Write about Capacitors and Inductors.
5. Describe about Sum of products method.
6. Write about Pairs, quads and octets.
7. Explain the operation of Half Adder.
8. Write the applications of RAM.
9. Write about applications of Inductors.
10. Explain the working of D-Flip-Flop.
11. Write about Race around condition.
12. Describe about Error detecting and Error-correcting codes.

Section – B

II. Answer the following questions using internal choice.

[4 x 12 = 48]

13. (a) State and prove maximum power transfer theorem.

[OR]

   (b) Explain Hexa to Binary, Binary to Decimal conversion method with example.

14. (a) Describe briefly about Data Processing Circuits.

[OR]

   (b) Simplify the following with karnaugh map method $Y = \sum(3,4,5,7,9,13,14,15)$.

15. (a) Explain about Binary Adder/Subtractor.

[OR]

   (b) Describe about Programming the ROM with example.

16. (a) With a neet diagram explain the operation of shift resistor.

[OR]

   (b) Explain about J-K Flip Flop and Master slave J-K Flip Flop.

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Code No. 23D/140 /NC/Chd

Nizam College (Autonomous)
Faculty of Science
B.SC. I- Semester Examinations, December - 2023
Computer Hardware : Paper – 1
(Digital Circuits Combination Logic)

me : 3 Hours

Max. Marks : 80

Section – A

Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. State and explain Kirchoff's Laws.
2. Explain the colour coding in Capacitors and Inductors.
3. Convert give binary number [10110111] (2) decimal and Hexadecimal.
4. Using NAND gates alone construct AND, OR, NOT gates.
5. Explain 5 in put Exclusive-OR gate. What is its significance?
6. Explain with logic circuit of Encoder.
7. With Logic circuit explain Half Adder.
8. Add {11110110} + {11101101} and, Subtract {11000111} from {11111010}.
9. Write a note on semiconductor memory devices.
10. Distinguish between synchronous and asynchronous counters. Which is faster?
11. How many Flip-flops are required for (i) Mod-8 counter and (ii) Mod-4 counter.
12. Mention few Applications of Counters.

Section – B

Answer the following questions.

[4 x 12 = 48]

13. (a) State and prove Super position Theorem.
    [OR]
    (b) State and Prove Maximum power transfer Theorem.

14. (a) Simplify the Boolean functions, using four variable Karnaugh map
    $F(A,B,C,D)= \sum(1,2,4,5,7,9,11,14,15)$.
    [OR]
    (b) Explain with logic circuit the working of 4 to 1MUX and 1to 4 Demultiplexer.

15. (a) Explain 2's compliment method. Explain Adder and, Subtractor circuits.
    [OR]
    (b) What is ROM and Explain the programming of ROM.

16. (a) Explain with logic circuit J-K flip flop and the D-type flip-flop with truth tables.
    [OR]
    (b) Explain the working of four bit binary counter with circuit diagram.

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NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.Sc., II – SEMESTER EXAMINATIONS, MAY 2023
COMPUTER HARDWARE – PAPER - 2
(DIGITAL DESIGN)

TIME: 3 HOURS   MAX. MARKS: 80

SECTION – A

Answer any EIGHT of the following questions.   [8 x 4 = 32]

1. Explain TTL Integrated circuit design for any one gate.

2. Distinguish between TTL and CMOS logic families.

3. Mention special characteristics of Digital Integrated circuits.

4. What are excitation Tables? Explain.

5. Design J.K. Flip Flop and Explain its Truth table.

6. What is meant by state reduction and Assignment.

7. Discuss binary subtractor circuit with an examples.

8. Write a note on semiconductor memories.

9. Explain briefly about ASM chart.

10. Explain block diagram of an op-Amplifier.

11. Define Differential gain and common mode gain.

12. Mention few applications of op-amplifiers.

SECTION – B

Answer the following questions using internal choice.   [4 x 12 = 48]

13. (a) Construct NOR gate using TTL Logic family and explain.

[OR]

(b) Construct NAND gate using CMOS logic family and explain its working.

14. (a) Design and explain edge triggered D-Flip Flop and J-K Flip Flop.

[OR]

(b) What is modulus of a counter? Design mod-7 counter and explain its working.

15. (a) Explain the constructions of 4 bit Encoder and explain its working.

[OR]

(b) Design 8 to 1 multiplexer. Draw the circuit diagram and explain its working.

16. (a) Draw the circuit diagram of Non-Inverting op-amp and obtain an expression for its gain.

[OR]

(b) Draw R-2R ladder circuit and explain the digital to analog conversion.

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Nizam College (Autonomous)
Faculty of Science
B.SC. III- Semester Examinations, January - 2023
Computer Hardware : SEC-2

Time : 2 Hours

Max. Marks : 40

Section – A

I. *Answer any FOUR of the following questions.*

[4 x 4 = 16]

1. Write about Characteristics of IoT.

2. Draw the Physical Design of IoT and Specify it.

3. Discuss about IoT Applications

4. What is SDN Explain?

5. Write about SNMP Limitations.

6. What is Python and its Importance in IoT?

7. What is IoT Platform design?

8. Write about Network operator Requirements.

Section – B

II. *Answer the following questions using internal choice*

[3 x 8 = 24]

9. (a) Explain briefly about Physical and Logical design of IoT.

[OR]

(b) Write about IoT Enabling technologies and Deployment Template.

10. (a) Describe about Software defined networking SDN.

[OR]

(b) Explain about Network Function Virtualization.

11. (a) Describe the Components of SNMP with Example.

[OR]

(b) Discuss Home Automation using IoT.

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Nizam College (Autonomous)
Faculty of Science
B.SC. III- Semester Examinations, May - 2023
Computer Hardware: Paper - 3
(Microprocessor Architechre Programming and Applications with 8085)

Time : 3 Hours   Max. Marks : 80

Section – A

I. Answer any EIGHT of the following questions.   [8 x 4 = 32]

1. What is ALU? How it operates in 8085 up?
2. Describe the branch instructions of 8085 microprocessor.
3. Describe the flag registers.
4. Explain different stack instructions.
5. Explain Logical Group of Instructions.
6. Write about conditional call and return.
7. Describe the action of D/A converter.
8. How to write a program using assembler to find the product of two numbers.
9. Write short notes on 8086 microprocessor.
10. Explain the programmable DMA controller with INTEL 8257.
11. Explain the Data and Address Bus in 8085 up.
12. Write short notes on seven segment display.

Section-B

II. Answer the following questions using internal choice.   [4 x 12 = 48]

13. (a) What are the basic operations performed by the microprocessor? Explain the bus structure of 8085 microprocessor with necessary diagram.
    [OR]
    (b) Explain the pin diagram of 8085 microprocessor.

14. (a) Discuss about each group of instructions set of INTEL 8085 microprocessor with examples.
    [OR]
    (b) Explain the seven segment LED display, interface to PPI8255.

15. (a) What are different interrupts of 8085? Give their priorities.
    [OR]
    (b) Draw the block diagram of 8259 PIC and explain in-detail.

16. (a) Draw the block diagram of 8255 and explain the working of each block. What is Control word?
    [OR]
    (b) Explain the construction and working of A/D converter.

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Nizam College (Autonomous)
Faculty of Science
B.SC. III- Semester Examinations, December - 2023
Computer Hardware: Paper - 3
(Microprocessor Architecture Programming and Applications with 8085)

Time : 3 Hours

Max. Marks : 80

Section – A

I. *Answer any EIGHT of the following questions.*   [8 x 4 = 32]

1. What is ALU? Explain.

2. What are the general purpose registers of 8085 microprocessor.

3. Explain memory interfacing in the 8085 Microprocessor.

4. Explain any four branching operations of 8085 Microprocessor

5. What is conditional call give any four example.

6. Explain the BCD arthematics of 8085 Microprocessors.

7. What are the restart as software instructions of 8085 Microprocessors.

8. Explain software development system.

9. Write an assembly language program to add two 8 bit numbers.

10. What are the programmable peripherals?

11. Write a short note on DMA interface initialization.

12. Explain the 8255 programmable peripheral interface.

Section-B

II. *Answer the following questions.*   [4 x 12 = 48]

13. (a) Explain the architecture of 8085 microprocessor with a neat block diagram.
    [OR]
    (b) Describe interfacing memory mapped input / output of 8085 Microprocessors.

14. (a) Explain 16-bit data transfer and mathematical instructions of 8085 Microprocessors.
    [OR]
    (b) Explain Interfacing of 8085 Microprocessors with BCD-Seven Segment LED.

15. (a) Describe the 8259 programmable interrupt controller.
    [OR]
    (b) Describe software development system and assemblers.

16. (a) Explain the introduction of 8086 Microprocessors.
    [OR]
    (b) Discuss the interrupt structure of 8085 microprocessor. What are RIM, SIM Instructions.

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NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.SC. IV- SEMESTER EXAMINATIONS, MAY – 2023
COMPUTER HARDWARE : SEC - IV
(PROGRAMMING INTERNET OF THINGS (IOT)

TIME: 2 HOURS   **MAX. MARKS: 40**

SECTION – A

I. *Answer any FOUR of the following questions.*   [4 x 4 = 16]

1. Define IoT and Describe its Components

2. What is the importance of Python in IoT

3. 3 .Explain the needs of Tuple and Type conversion

4. Write about Push and Pull Communication Models.

5. Define Packages

6. Write about features of NODE MCU ESP32

7. What are the challenges to widespread use of IoT

8. Write a simple program on Raspberry Pi with Python

SECTION – B

II. *Answer the following questions using internal choice.*   [3 x 8 = 24]

9. (a) Draw and explain the block diagram for IoT system.

[OR]

(b) Write briefly about Strings, Lists and Type Conversions.

10.(a) Write briefly about the functional architecture design for IoT platform.

[OR]

(b) Explain in detail about Control Flow.

11. (a) What is NET CONF YANG? Explain IoT system management with NET CONF YANG.

[OR]

(b) Describe briefly about the types of data that can be connected between IoT devices?

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Code No. 23J540 /NC/Chd

Nizam College (Autonomous)
Faculty of Science
B.SC. V- Semester Examinations, January - 2023
Computer Hardware : Paper – V
(VHDL)

Time : 3 Hours

Max. Marks : 80

Section – A

I. Answer any EIGHT of the following questions.   [8 x 4 = 32]

1. Mention some of the differences between HDL and other software languages.
2. Write about identifiers and data objects.
3. Explain configuration statement.
4. Write about delta delays.
5. Explain conditional signal assignment statement.
6. Write about direct instantiation of component.
7. Write about functions with examples.
8. Mention differences between library and user clauses.
9. Write about attributes.
10. Explain modeling entity interfaces.
11. Write a program to implement Half-adder.
12. Write a model for 3-bit decoder circuit.

Section – B

II. Answer the following questions using internal choice.   [4 x 12 = 48]

13. (a) Explain Behavioral modeling with an example?
[OR]
    (b) Explain the process and sequential statements with examples?

14. (a) Explain Data flow modeling with an example?
[OR]
    (b) Explain in detail component declaration and component instantiation with examples?

15. (a) Explain in detail about packages?
[OR]
    (b) Explain about PORTS and their behavior?

16. (a) Write a Test Bench for a Full-adder?
[OR]
    (b) Explain modeling a clock driver?

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Code No. 23M540 /NC/CHD

Nizam College (Autonomous)
Faculty of Science
B.SC. V- Semester Examinations, May - 2023
Computer Hardware : Paper – 5
(VHDL)

Time : 3 Hours

Max. Marks : 80

Section – A

I. Answer any EIGHT of the following questions.   [8 x 4 = 32]

1. Explain any four operators in VHDL?
2. Explain about transport delay model?
3. What are sequential statements?
4. Mention differences between concurrent and sequential assignment?
5. Explain about selected signal assignment?
6. Write about component declaration?
7. Mention differences between subprogram over loadings and operator over loadings?
8. Write about ports declaration in VHDL?
9. Explain design libraries?
10. Write a model for a stack?
11. Write a model for 4 input and Gate?
12. What is a Test Bench? What is its importance?

Section – B

II. Answer the following questions using internal choice.   [4 x 12 = 48]

13. (a) Give an overview of digital system design using VHDL.
    [OR]
    (b) Explain about entity declaration and Architecture body with examples.

14. (a) Write a program in structural style of modeling design 4 input MUX.
    [OR]
    (b) Discuss styles of modeling.

15. (a) Explain function and procedures with simple examples.
    [OR]
    (b) Explain in detail about libraries.

16. (a) Write a Test Bench for a full-adder.
    [OR]
    (b) Explain modeling a pulse counter

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Nizam College (Autonomous)
Faculty of Science
B.Sc. V- Semester Examinations, December – 2023
Computer Hardware : Paper - 5
(VHDL)

Time: 3 Hours

Max. Marks: 80

SECTION – A

I. *Answer any EIGHT of the following questions.*   [8 x 4 = 32]

1. What is VHDL and how it is useful to you.

2. Write down scalers and operators in VHDL.

3. What is physical in VHDL? What is its significance.

4. Write down the syntax of Process statement. Where it is used?

5. What is signal assignment? Write its syntax.

6. What is delta delay? How it is useful?

7. What is the difference between concurrent and sequential statements.

8. What is component in VHDL? How can you define and use a component.

9. Explain the order of analysis .

10. Write a sample syntax for the package declaration and package body.

11. What is a Test Bench?

12. What are conditional operations?

SECTION – B

II. *Answer the following questions*   [4 x 12 = 48]

13. (a) Write Data objects in VHDL. Explain Access types.
            [OR]
     (b) Explain Scaler types with examples.

14. (a) Explain different styles of modelling each with an example.
            [OR]
     (b) Write a program to implement 4 bit Shift Register and its Test Bench.

15. (a) What is overloading? Explain the operator, subprogram overloading with syntax.
            [OR]
     (b) What are implicit visibility, Explicit visibilities?

16. (a) How a Testbench is used in a simulation? Explain with a 1 to 4 decoder example.
            [OR]
     (b) Write a program to implement and test a 4-Bit binary counter.

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NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.SC. VI- SEMESTER EXAMINATIONS, MAY – 2023
COMPUTER HARDWARE : PAPER - 6
(COMPUTER HARDWARE-II)

TIME: 3 HOURS   MAX. MARKS: 80

SECTION – A

Answer any EIGHT of the following questions.   [8 x 4 = 32]

1. Write a short notes on USB.

2. Mention the IEEE1394 standards and 1394a technical details.

3. Explain about 101-keboard.

4. Mention different types of broadband internet access types.

5. Write about major types of DSL (Digital subscription line).

6. Mention different types of networks.

7. Write a short notes on negative DC voltage.

8. Explain about front panel motherboard-controls.

9. Write a short notes on solid state drives.

10. Mention different types of diagnostics software for PC's.

11. Write about power-line noise.

12. Write any four troubleshooting problems.

SECTION – B

Answer the following questions using internal choice.   [4 x 12 = 48]

13. (a) Explain about Serial and parallel ports.

[OR]

(b) In detail explain about different types of pointing devices.

14. (a) Explain about routers and Switches.

[OR]

(b) Write about client and peer to peer networks.

15. (a) Explain the Block diagram of computer SMPS.

[OR]

(b) How the installation of the CPU and heatsink is done explain.

16. (a) Write about different test equipments required for PC.

[OR]

(b) How the hardware boot process is done explain.

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