

**C.U.SHAH UNIVERSITY**

Summer-2015

Subject Code: 5CS01BCA1

Subject Name: Basics of Computer Architecture

Course Name: M.Sc(IT)

Date: 6/5/2015

Semester:I

Marks: 70

Time:10:30 TO 01:30

**Instructions:**

- 1) Attempt all Questions of both sections in same answer book/Supplementary.
- 2) Use of Programmable calculator & any other electronic instrument prohibited.
- 3) Instructions written on main answer book are strictly to be obeyed.
- 4) Draw neat diagrams & figures (if necessary) at right places.
- 5) Assume suitable & perfect data if needed.

**SECTION-I**

Q:1 Explain following terms.

- |   |  |   |
|---|--|---|
| 1 | NAND Gate (symbol diagram & truth table) | 2 |
| 2 | Dot Matrix Printer                       | 2 |
| 3 | OCR-OMR                                  | 3 |

Q:2 a Attempt the following questions.

1.	What is Computer ? Explain CU(Control Unit) and ALU( Arithmetic and logical Unit).	4
		4

2.	What is binary number system? Explain weighted binary number code.	4
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b	Do as directed.	6
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1)	162 (Convert decimal number to binary, octal , hexadecimal)	
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2)	100011 , 111 (Perform , Addition, Multiplication, Subtraction)	
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**OR**

Q:2 a Perform subtraction using 1's complement method.

1)	11011101 - 11101010	6
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2)	10010110-10101010	
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b	What is Perfect induction method ? Explain with suitable example	4
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c	Explain Gray code, Convert binary to XS-3 gray code.	4
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1).	1110111	
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Q:3 a Simplify Given Boolean Expression. Draw circuit diagram of given block.

	$(A'BC') + (A'B'C) + (A'BC) + (AB'C) = A'B + B'C$	7
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b	What is SOP(Sum of Product) and POS(Product of sum) with suitable example.	7
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**OR**

Q:3 a Explain Address bus, data bus with diagram

b	Explain NAND gate. Justify "NAND and NOR gate it is universal gate"	7
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## SECTION-II

- Q:4 Answer the following Terms.
- |   |                                   |   |
|---|-----------------------------------|---|
| 1 | PROM                              | 2 |
| 2 | Circuit diagram of : Half Adder   | 2 |
| 3 | Circuit diagram : Half subtractor | 3 |
- Q:5
- |   |  |   |
|---|--|---|
| a | Explain Full Adder? Draw circuit diagram with NAND gate.       | 6 |
| b | What is Sequential circuit? Explain S-R flipflop with diagram. | 4 |
| c | Explain J-K master flip flop with its diagram.                 | 4 |
- OR**
- Q:5
- |   |  |   |
|---|--|---|
| a | Explain types of binary counter. Explain 4-bit counter with diagram. | 6 |
| b | What is RAM? Explain types of RAM                                    | 4 |
| C | Draw the circuit diagram of Multiplexer and demultiplexer            | 4 |
- Q:6
- |   |  |   |
|---|--|---|
| a | Explain Direct Memory Access in detail.        | 7 |
| b | Write a brief short note on : Addressing modes | 7 |
- OR**
- Q:6
- |   |  |   |
|---|--|---|
| b | Explain 8086 microprocessor with pin diagram. Explain each in detail.              | 7 |
|   | What is microprocessor? Explain Different instruction set for 8086 microprocessor. | 7 |

