647510 **BCA2CoaC103x** **Seat No :_____**

B.C.A Semester - 2 (*CBCS*) Examination
March/April – 2023 (New Course)
Computer Organization and Architecture (CORE)

Time: 2:30 Hours **Marks: 70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1(A) Answer the following questions. **(03)**

1. The _____gate is an electronic circuit that gives a high output, if one or more of its inputs are high.
2. The order in which terms are written does not affect their value (AB =BA, A+B = B+A) is known as _____ law.
3. Draw the symbol and truth table of not gate.

Q.1(B) Answer the following questions. (Any Two) **(06)**

1. Explain DeMorgans theorem.
2. Explain NAND and NOR implementation.
3. Explain block diagram of digital computer.
4. Explain simplification of Boolean expression using Boolean algebra.

Q.1(C) Answer the following questions. (Any One) **(05)**

1. Explain AND, OR, XOR, XNOR with graphical symbol and truth table.
2. Explain POS and SOP simplification.

Q.2(A) Answer the following questions. **(03)**

1. A _____ circuit is a connected arrangement of logic gates with a set of inputs and outputs.
2. Give full form of SR FF.
3. _____ is the adder that adds three inputs and produces two outputs.

Q.2(B) Answer the following questions. (Any Two) **(06)**

1. Explain D flip flop.
2. Explain Half Adder.
3. Explain Flip flop input equation.
4. Draw block diagram of combinational circuit.

Q.2(C) Answer the following questions. (Any One) **(05)**

1. Write short note on state table and state diagram.
2. Explain Edged triggered and master slave flip flop.

Q.3(A) Answer the following questions. **(03)**

1. Give full form of CMOS.
2. A _____is combinational circuit that selects binary information from one of many input lines and directs it to a single output line.
3. An _____is a combinational circuit that performs the reverse operation of Decoder. It has maximum of 2^n input lines and 'n' output lines.

Q.3(B) Answer the following questions. (Any Two) **(06)**

1. What is decoder? Explain 2 to 4 line decoder.
2. Explain 4 bit binary counter with parallel load.
3. Explain octal to binary encoder.
4. Explain NAND gate decoder.

Q.3(C) Answer the following questions. (Any One) **(05)**

1. Write short note on Multiplexer.
2. Write short note on Register.

Q.4(A) Answer the following questions. **(03)**

1. The _____ controls the transfer of information among the registers and instructs the ALU as to which operation to perform.
2. _____is a storage that stores information in such a manner that the item stored last is the first item received.
3. The _____points at an array of data in memory stack.

Q.4(B) Answer the following questions. (Any Two) **(06)**

1. Explain control word.
2. Explain major component of CPU.
3. Explain use of registers.
4. Explain registers for basic computers.

Q.4(C) Answer the following questions. (Any One) **(05)**

1. Write short note on memory stack and register stack.
2. Explain polish and reverse polish notation.

Q.5(A) Answer the following questions. **(03)**

1. _____ command is used to activate the peripheral and to inform it what to do.
2. _____ bus is placed outside the processor. It is used to transmit data between one parts of computer to another parts of computer.
3. _____ is also called the selector line. It selects address bus, data bus or the processor to read/write data.

Q.5(B) Answer the following questions. (Any Two) **(06)**

1. Explain bus request and bus grant.
2. Explain Auxiliary and cache memory.
3. Explain I/O interface.
4. Draw and discuss a block diagram of computer with I/O processor.

Q.5(C) Answer the following questions. (Any One) **(05)**

1. Write short note on DMA Controller.
2. Write short note on RAM chip block diagram and function table.

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