

B.C.A Semester - 2 (CBCS) Examination**March/April - 2023 (OLD COURSE)****CS-09 COMPUTER ORGANIZATION & 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. (04)

1. _____ are blocks of hardware that produce a logical 0 or logical 1 output signal depending on input signal provided to it.
2. The _____ gate is an electronic circuit that gives a HIGH output (1) only if all its inputs are high
3. _____ algebra is an algebra that deals with binary variables and logic operations.
4. Which gates are known as universal gates?

Q.1(B) Answer the following questions. (Any One) (02)

1. What is Boolean Algebra?
2. What is combinational and sequential circuit?

Q.1(C) Answer the following questions. (Any One) (03)

1. What is Don't care condition?
2. Explain universal gates.

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

1. Write short note on JK and SR flip flops.
2. Explain how to simplify Boolean function using Karnaugh map method.

Q.2(A) Answer the following questions. (04)

1. What is Encoder?
2. A _____ is a device that allows one of several analog or digital input signals which are to be selected and transmits the input that is selected into a single medium.
3. _____ is a digital electronic circuit used to delay the change of state of its output signal until the next rising edge of a clock timing input signal occurs.
4. Draw 4 to 1 multiplexer symbol.

Q.2(B) Answer the following questions. (Any One) (02)

1. Draw block diagram of register.
2. Define decoder.

Q.2(C) Answer the following questions. (Any One) (03)

1. Explain parallel and shift register.
2. What is encoder? Explain with example.

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

1. Write short note on Multiplexer and Demultiplexer.
2. Write short note on Asynchronous 4 bits Binary counter.

Q.3(A) Answer the following questions. (04)

1. _____ bit is used for positive number.
2. $10 \times 11 =$ _____. (Do binary multiplication).
3. $1 \times 0 =$ _____.
4. $0 / 1 =$ _____.

- Q.3(B) Answer the following questions. (Any One) (02)**
1. What is parity bit?
 2. Write four rules for binary multiplication.
- Q.3(C) Answer the following questions. (Any One) (03)**
1. What is fixed point representation?
 2. Perform following binary multiplication and division :
(i) 111×101 (ii) $10010 / 11$
- Q.3(D) Answer the following questions. (Any One) (05)**
1. Explain floating point representation.
 2. Write the steps for binary division. Explain with example.
- Q.4(A) Answer the following questions. (04)**
1. The _____ Perform the required micro operations for executing the instructions.
 2. A control word has _____ bits
 3. The Operation of insertion is called _____ operation because a new item is inserted on top of the stack.
 4. The _____ points at the address of the next instruction in the program in memory stack.
- Q.4(B) Answer the following questions. (Any One) (02)**
1. Draw block diagram of ALU.
 2. Explain general register organization.
- Q.4(C) Answer the following questions. (Any One) (03)**
1. Explain Interrupt.
 2. Explain Accumulator register.
- Q.4(D) Answer the following questions. (Any One) (05)**
1. Explain control word.
 2. Explain Register stack and memory stack
- Q.5(A) Answer the following questions. (04)**
1. _____ is bi-directional bus which allows the transfer of data between the microprocessor and memory or peripheral devices.
 2. _____ bus connects processor with main memory.
 3. Give full form of IOP.
 4. _____ is unidirectional bus which carries address of memory location or port no. of the peripheral devices.
- Q.5(B) Answer the following questions. (Any One) (02)**
1. Explain input output buses.
 2. Explain memory buses.
- Q.5(C) Answer the following questions. (Any One) (03)**
1. Explain data bus, address bus and control lines.
 2. Explain Input output processor.
- Q.5(D) Answer the following questions. (Any One) (05)**
1. Write short note on DMA Controller.
 2. Explain Direct Memory Access.
