

Digital Computer Organization

Session 2013 – 16

1. Choose the correct answer from the following:
 - a. Maximum n bit 2^{1s} complement number is
 1. 2^n
 2. 2^{n-1}
 3. $2^{n-1}-1$
 4. None of these
 - b. The sum of two hexadecimal numbers 23D and 9AA gives the hexadecimal numbers
 1. BE7
 2. BE5
 3. BF6
 4. AF7
 - c. Using an additional NOT gate a JK flip flop can be converted into
 1. T flip flop
 2. RS flip-flop
 3. Master Slave flip-flop
 4. D flip-flop
 - d. Subtract or can be implemented by
 1. Adder
 2. Complementor
 3. Both a & b
 4. None of these
 - e. The right most bit in a data word is called
 1. Most significant bit
 2. Least significant bit
 3. Dirty bit
 4. Access bit
 - f. Data from memory location after fetching is deposited by memory in
 1. MAR
 2. MBR
 3. IR
 4. Status register

g. How many minimum, NAND GATES are required make a flip flop?

1. 4
2. 3
3. 2
4. 5

h. Cache memory is implemented using

1. Dynamic RAM
2. Static RAM
3. PROM
4. EPROM

i. The ALU performs

1. Arithmetic operation
2. Logical operations
3. Both a & b
4. None of these

j. A register is a group of

1. OR gates
2. OR & AND gates
3. Flip-flop
4. None of these

k. CARRY, in a half adder, can be obtained by using

1. Ex-OR gate
2. AND gate
3. OR gate
4. EX-NOR gate

l. A Boolean function consists of?

1. Binary variable
2. Logical operators
3. Equal sign
4. All of the above

m. Which GATE complements the input bit?

1. AND
2. XOR
3. NOT
4. NAND

- n. ECL stands for
- Enhanced-computing logic
 - Effective-computing logic
 - Emitter-coupled logic
 - None of these
2. What is a radix or base of the system? With the help of this system, briefly explain the various types of number system.
3. Explain with suitable diagram about the different types of logic-gates.
4. A. State and prove DeMorgan's theorem.
b. using DeMorgan's theorem show that
- $(A+B)' (A'+B')' = 0$
 - $A+A'B+A'B'=1$
5. Perform the following conversions:
- CONVERT DECIMAL NO. 7562 to Octal
 - Convert decimal no. 1938 to hexadecimal
 - Convert decimal no. 175 to binary
 - Convert hexadecimal no F3A7C2 to Octal
 - Convert binary number 110110100 to decimal
 - Convert decimal number 0.625 to binary
 - Convert binary number 001101111011111 to hexadecimal.
6. What is the basic constructional difference between an S-R flip flop and J-K Flip-Flop? Show how an S-R Flip-Flop. Give truth table of J-K Flip-Flop.
7. Obtain the simplified Boolean function for the full adder is sum of product and draw the logic diagram using NAND GATE.
8. Give the merits and demerits of the floating point and fixed point representation for storing real numbers.
9. What do you mean by primary and secondary memory unit? Explain the different types of secondary memory units.
10. Write short notes on any two of the followings:
- Half adder and Full adder
 - Shift Register
 - Multiplexers and DE multiplexers
 - Mapping Techniques
 - Fixed and floating point representation