Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore-641043.

Master's Degree Examination – November 2017

I Semester

Class : I PG **Time: 3 hours**
Major : Computer Applications **Max. Marks: 60**

17MCAC02 Digital Computer Fundamentals

Part A **10 x 1/2 = 5**

Choose the correct answer

1. Which is typically the longest: bit, byte, nibble, word?

a. Bit b. Byte c. Nibble d. Word

2. Convert decimal 64 to binary.

a. 01010010 b. 01000000 c. 00110110 d. 01001000

3. Simplits the equation V+BC using Demorgan's law

a. C+(B+C) b. C+ (B+C) c. C+ (BC) d. C+(C+B)

4. Which of the following expressions is in the sum-of-products (SOP) form?

a. (A + B)(C + D) b. (A)B(CD) c. AB(CD) d. AB + CD

5. The output of an exclusive-NOR gate is 1. Which input combination is correct?

a. A = 1, B = 0 b. A = 0, B = 1 c. A = 0, B = 0 d. none of the above

6. Before an SOP implementation, the expression would require a total of how many gates?

a. 1 b. 2 c. 4 d. 5

7. Which of the following is correct for a gated D flip-flop?

a. The output toggles if one of the inputs is held HIGH.

b. Only one of the inputs can be HIGH at a time.

c. The output complement follows the input when enabled.

d. Q output follows the input D when the enable is HIGH.

8. When is a flip-flop said to be transparent?

a. when the Q output is opposite the input b. when the Q output follows the input

c. when you can see through the IC packaging d. none of the above

9. How many address bits are needed to select all memory locations in the 2118 16K × 1 RAM?

a. 8 b. 10 c. 14 d. 16

10. The storage element for a static RAM is the _____.

a. diode b. Resistor c. Capacitor d. flip-flop

Part B

5 x 4 = 20

Answer ALL questions

Each answer should not exceed 200 words or one page

11.a. Convert Decimal 41 to binary (Or)

11.b. Write about Binary Number System

12. a. Find SOP (Sum Of Product) using the following truth Table

X	Y	Z	OUTPUT
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

(Or)

12.b. Find POS (Product Of Sum) using the following truth Table

X	Y	Z	OUTPUT
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

13. a. Draw the block diagram and truth table of octal to binary Encoder(Or)

13. b. Draw the block diagram of 4 to 6 Decoder

14. a. Discuss on D flip flop (Or)

14. b. Write about Clocked Flip flops.

15. a. Draw the memory hierarchy diagram. (Or)

15. b. Write about Memory Geometry.

Part C

5 x 7 = 35

Answer ALL questions

Each answer should not exceed 600 words or three pages

16. a. Explain AND, OR, NOT Logic gates with truth tables (Or)

16. b. Covert the following
i. Convert decimal 153 to octal
ii. Perform the addition $(59F)_{16}$ $(E46_{16})$

17. a. Write in detail about De Morgan's Theorems (Or)

17.b. Simplify $f(V,W,X,Y,Z)=\Sigma m(0,1,4,5,6,11,12,14,16,20,22,28,30,31)$

18.a. What is Half Adder? Explain with its proper truth table and circuit. (Or)

18.b. Write about De-Multiplexer with example.

19. a. Explain shift registers and its types. (Or)

19. b. Write in detail about Master Slave flip flop.

20.a. Write in detail about Secondary memory (Or)

20.b. Explain Auxiliary storage devices