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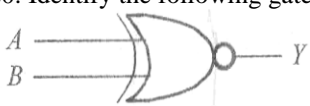
Digital Electronics and Microprocessor

Unit I: **Number System and Logic Gates**

1. What is CMOS?   [2017,2015]
2. Write the distributive and associative law of Boolean Law's?   [2017]
3. Define minterm and maxterm?   [2017]
4. Simplify the following expression $\overline{(A + \bar{\bar{B}}) + CD}$?   [2017]
5. State and prove De-Morgan's theorem?   [2017]
6. What do you understand by logic gates? Discuss the various types of gates. Why the NAND gate is called digital building gate?   [2017]
7. Simplify the following into POS using K-MAP   [2017]
   $F(ABCD) = \sum(0,2,3,5,11,13)$
8. Differentiate between 1's and 2's complement?   [2016]
9. Draw truth table of XOR gate?   [2016]
10. State De-Morgan's laws?   [2016]
11. Convert the following into decimal: [2016]
    i. $(12121)_3$
    ii. $(50)_7$
12. Explain the characteristics of RTL logic family?   [2016]
13. Differentiate between MUX and DMUX?   [2016]
14. Explain of identity?   [2015]
15. Differentiate between SOP and POS forms?   [2015]
16. Draw truth table of XOR gate?   [2015]
17. Realize the AND, OR, XOR gates using universal gate?   [2015]
18. Prove the De-Morgan's law?   [2015]
19. Explain characteristics of logic family?   [2015]
20. Identify the following gate: [2015]

21. Simplify the following with K-map: [2015]
    $F(A,B,C,D) = \sum_m(1,3,7,11,15) + \sum_d(0,2,5)$
22. Convert the following hexadecimal number to decimal number: [2014]
    $(COFFEE)_{16} = (\ \ \ )_{10}$
23. Minimize the following Boolean function   [2014]
    F=x'y'z'+x'y'z'+x'yz+x'y+xz
24. Simply the following functions using k-map: [2014]
    F=A'B'D' + ACD + A'BC
    D=A'BC'D + A'CD + AB'D'
25. Explain logic families and their characteristics?   [2014]
26. Write decimal number's corresponding to following binary number.   [2013]
    i. 11011
    ii. 11001010
27. Convert Decimal number 687 to its binary equivalent?   [2013]
28. Give truth table of XOR gate?   [2013]
29. Subtract 100011 with 11101?   [2013]
30. Write the equation of 'SOP' if the inputs are 'A' and 'B'?   [2013]
31. Write hexadecimal equivalent of 7070 decimal?   [2013]
32. Add 110110 with 11101?   [2013]
33. Multiply 111 with 111?   [2013]
34. By using Minimum Number of NAND gates derive the AND gate?   [2013]
35. Draw the logic circuit for the following Boolean equation: [2013]
 $Y = \left(AB\bar{C} + \bar{A}\bar{B}\bar{C}\right).\bar{\bar{D}}$
36. Realize the OR gate using NOR gate?   [2014]

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Unit II: **Combinational and Sequential Circuits**

1. What is counter?   [2017]
2. Draw diagram of 4 X 1 MUX?   [2017]
3. Write the full form of DMA?   [2017]
4. What is combinational circuit? Give Example?   [2017]
5. Explain 4-bit parallel binary adder with a neat diagram?   [2017]
6. Give two examples of semiconductor memories?   [2016]
7. What is PLA(Programmable Logic Array)?   [2016]
8. Implement a full adder circuit with a decoder and two OR Gates?   [2016]
9. Explain working of following with Truth Tables: [2016]
      i.   JK-flip flop
      ii.   RS-flip flop
10. Differentiate between the working of up down counters and decade counters?   [2016]
11. What is the use of adder circuit?   [2015]
12. Explain T Flip-Flop?   [2015]
13. Justify the statement "sequential circuit is a combinational logic circuit with memory
    element"?   [2015]
14. Explain parallel binary adder?   [2015]
15. Identify following flip-flops and explain its working: [2015]
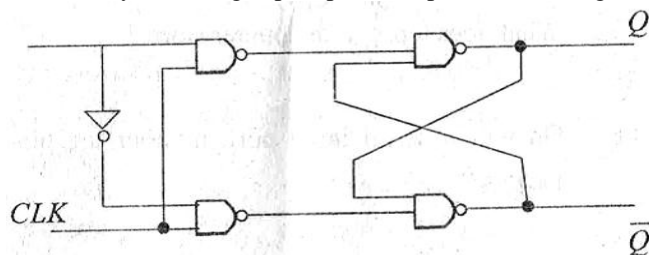
16. Explain encoder circuit and its working with diagram and truth table?   [2015]
17. Define Half Adder?   [2014]
18. What will be the output of SR flip flop when both the inputs are 1(one)?   [2014]
19. Draw excitation table of D flip-flop?   [2014]
20. How many selection line are required for the construction of 16 X 1 multiplier?   [2014]
21. Differentiate between Half Adder and full Adder?   [2014]
22. Write a short note on De-Multiplexer?   [2014]
23. Explain Master-slave flip-flop?   [2014]
24. Differentiate between combinational circuit and sequential circuit?   [2014]
25. Explain K-map in SOP and POS forms?   [2014]
26. Simplify the following function using K-Map: [2014]
          F=BDE+B'C'D+CDE+A'B'CE+A'B'C+B'C'D'E'
27. Explain counter and its types?   [2014]
28. Define parallel adder circuit?   [2013]
29. Define Decoder?   [2013]
30. Define full adder?   [2013]
31. Describe multiplexer with its circuit diagram?   [2013]
32. Explain the working of Synchronous Binary Counters?   [2013]
33. Explain semiconductor?   [2013]
34. Describe the working of Decade Counter(7490)?   [2013]
35. Describe R-S Flip Flop with its block symbol, truth table. What is JK Master-Slave type
    flip flop?   [2013]

Unit III: **Introduction to 8085 Microprocessor**

1. Write the name of all interrupt pins of 8085?   [2017]
2. Write the name of all register set of 8085 microprocessor?   [2017]

3. Specify the size of data, address, memory word and memory capacity of 8085
   microprocessor? [2017]
4. Draw the pin diagram of 8085 microprocessor? [2017,2015,2014]
5. Write a program that finds the largest number in block of memory. The size of the block
   is stored in memory location 0021H and the block starts at address 0033H? [2017]
6. What is the function of HLDA signal in 8085? [2016]
7. Define fetch operation in 8085? [2016]
8. What is the function of Stack pointer? [2016]
9. Explain any four addressing modes of 8085? [2016,2015]
10. Draw and explain the architecture of 8085 microprocessor? [2016]
11. Write assembly language program to find the largest number in the given data array? [2016]
12. What is use of DAD instruction? [2015]
13. What is the use of accumulator register? [2015]
14. On which serial input port number of pin 8085 locates? [2015]
15. Write a program for 16-bit division in assembly language? [2015]
16. Differentiate between instruction cycle, fetch cycle, machine cycle and execute cycle? [2015]
17. Explain register organization of 8085 microprocessor? [2015]
18. What do you understand by opcode? [2014]
19. Write down any two 3-byte instructions? [2014]
20. Write program to multiply two 8-bit number? [2014]
21. Explain bus organization of 8085? [2014]
22. Explain Intel 8085 Microprocessor? [2013]
23. Write a program to sort the 10 data elements in descending order. Assume that data
   are stored at 3000_H to 4000_H? [2013]
24. What does a program counter store? [2015]

Unit IV: Interfacing Peripheral and Applications

1. What is PPI? [2017]
2. What is Stepper Motor? [2017,2016,2013]
3. Explain seven segment LED? [2017,2016,2014]
4. Explain the following terms: [2016,2014,2013]
   i. Programmable Peripheral Interface(8255).
   ii. D/A and A/D converters.
5. Explain construction, working and timing diagram of 7490? [2014]