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| **Digital Logic Design Prqactice Questions** |

MCQ’s

1. The binary equivalent of 0.15510 is
   1. 0.000001
   2. 0.001011
   3. 0.001000
   4. 0.001001
2. The binary equivalent of 7018 is
   1. 111000001
   2. 111000000
   3. 110000001
   4. 111100001
3. The 8-bit signed binary equivalent of -2810 is
   1. 1111 0100
   2. 1110 0100
   3. 1110 1100
   4. 1111 0100
4. The octal equivalent of signed 8-bit binary number 1111 11002 is
   1. 274
   2. 374
   3. 774
   4. 674
5. Applying the Boolean algebra techniques to simplify the expression AB + A(B + C) + B(B + C), the resultant simplified expression is:
   1. B + AC
   2. AB + B
   3. B + BC
   4. C + AB
6. Using the DeMorgan’s theorem to simplify , the resultant simplified expression is:
7. Given the following Karnaugh map, the minimum Boolean POS expression is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CD\AB | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 1 | 0 |
| 01 | 1 | X | X | 1 |
| 11 | X | 1 | 1 | X |
| 10 | 0 | 0 | 1 | 0 |

* 1. (A+C)(B+C)
  2. (A+D)(B+D)
  3. (B+A)(B+D)
  4. (A+D)(C+D)

1. A circuit has four inputs (A,B,C,D) representing a single decimal number ranging from 0 to 15 and an output (Y) that denotes whether the decimal number is divisible by 5. The SOP canonical of Y is:

**Mixed**

1. Convert
2. 12.4510 to Base 2
3. Convert 12.416 to Base 10
4. What range of hexadecimal numbers fit in 4 bytes field
5. Using 2’s complement conversion on operands, perform the following operations. Show all working in binary 8-bit numbers.
6. Compute the following using two’s complement

1100 11112 – 1100 00002

1. A four-bit binary number {A,B,C,D}, where A is the most significant digit and D the least significant digit, appears on the input to a combinational logic circuit. Output X indicates whether the number is divisible by 2 without any remainder and output Y indicates if the number is divisible by 3 without remainder. Obtain the sum-of-products logic equations for X and Y, simplify using K-Maps and draw the logic diagram.