

	MIDTERM EXAMINATION SPRING 2007 CS302 - DIGITAL LOGIC DESIGN (Session - 1)	Marks: 45 Time: 60min
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StudentID/LoginID: _____

Student Name: _____

Center Name/Code: _____

Exam Date: Friday, April 27, 2007

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions.
2. Calculators are **NOT** allowed.
3. Do not ask any questions about the contents of this examination from anyone.

a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.

b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.

- 4. Circuit Diagrams, Equations and Truth Tables** should be clear.

Write down all the steps in Subjective Questions. Marks will be deducted for missing steps.

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

For Teacher's use only										
Question Marks	1	2	3	4	5	6	7			Total

Question No: 1 (Marks: 10)

- (a) Convert the decimal number **6789.8** to octal correct to 3 decimal places **Marks = 4**
(b) Draw the truth table for the following expression $F = xy + x'z$ **Marks = 6**

Question No: 2 (Marks: 15)

Use **Quine-McCluskey** method to find all prime implicants for the given expression
 $f(a, b, c, d) = \sum m(3, 7, 9, 14) + \sum d(1, 4, 6, 11)$

Question No: 3 (Marks: 8)

Implement $f(A, B, C, D) = AC'D' + B'D$ using a **4-to-1 multiplexer**. Choose the appropriate control inputs

Question No: 4 (Marks: 3) - Please choose one

2's complement of hexadecimal number B70A is

- ▶ B70B
- ▶ B709
- ▶ 48F6
- ▶ 48F5

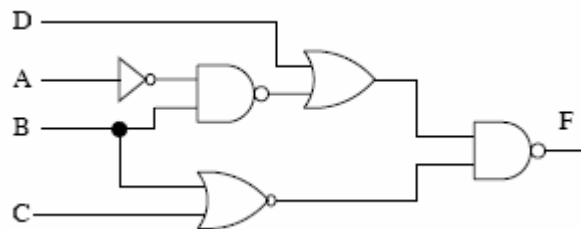
Question No: 5 (Marks: 3) - Please choose one

The minterm expansion for $F(A, B, C) = (A + B + C)(A + B' + C')(A' + B + C')(A' + B' + C)$ is

- ▶ $F(A, B, C) = \Pi M(0, 3, 5, 6)$
- ▶ $F(A, B, C) = \sum m(0, 3, 5, 6)$
- ▶ $F(A, B, C) = \Pi M(1, 2, 4, 7)$
- ▶ $F(A, B, C) = \sum m(1, 2, 4, 7)$

Question No: 6 (Marks: 3) - Please choose one

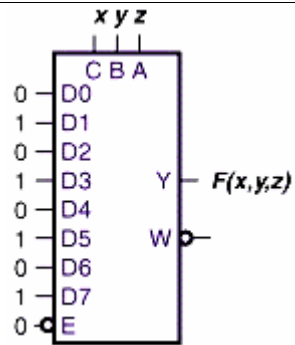
The minimum expression of the logic diagram shown below is:



- ▶ $(A'D + B)$
- ▶ $((D + (A'B)')(B + C)')'$
- ▶ $(AB'D) + B' + C'$
- ▶ $B + C$

Question No: 7 (Marks: 3) - Please choose one

An 8-line to 1-line multiplexer is connected as shown in the following figure



where output $Y = F(x, y, z)$ and z is the least significant input. Which of the following functions does Y generate?

- ▶ $F(x, y, z) = z$
- ▶ $F(x, y, z) = y$
- ▶ $F(x, y, z) = z'$
- ▶ $F(x, y, z) = x$