

CST8101 Computer Essentials

Mid-Term Assessment Part 2

- This is a closed book examination.
- Calculators, Laptops, Cell Phones, Headphones or any other electronic devices are not permitted.
- The assessment pages are **single-sided**.
- This test has a time limit of **120** minutes.
- Marks are indicated in the square [] brackets.
- Scrap paper is not needed. If you need more space, **write on the back of the preceding page**.
- **Show all work**
- This test **must be written in pencil**.
- For each question write your answer in the **space provided**.
- **Write neatly!**
- This test is worth 25% of your final grade
- When you are finished the test, hand in your test paper; Leave the room quietly and avoid talking to others.

50

1. Add the two Hex numbers as shown:

D	E	9	C
5	A	8	9
<hr/>			
1	3	9	2 5 ✓

A=10
 B=11
 C=12
 D=13
 E=14
 F=15

12 A
 + 9

 21
 -14

 5

[5]

8 + 1 = 9
 + 9

 18
 -14

 2

A = 10 + 1 = 11
 + 14

 25
 -14

 9

5 + 1 = 6
 + 13

 19
 -14

 3

5

Answer here in Hex

13925

10=A
 11=B
 12=C
 13=D
 14=E
 15=F

2. Subtract the two Hex numbers as shown:

F E 0 A
8 A B B

8	A	B	B
1000	1010	1011	1011
0111	0101	0100	0100
		+	1
0111	0101	0100	0101
7	5	4	5

1st complement
 2nd complement

[5]

F E 0 A
 7 5 4 5
7 3 4 F

disregard carry!

A = 10
 + 5

 15 = F

14
 + 5

 19
 - 16

 3

7 + 1 = 8
 + 15

 23
 - 16

 7

(5)

Answer here in Hex

734F

HEX

3. Convert the binary following binary number to octal

110011111010

6372

6372

1028
1028
2056

check:

[5] 2056 1028 512 256 128 64 32 16 8 4 2 1

Answer here in Octal

6372

5. Find the 2's complement of the following binary number. 101011000

$$\begin{array}{r}
 101011000 \\
 010100111 \\
 \hline
 010101000
 \end{array}$$

1's complement
 ↓
 2's complement

[5]

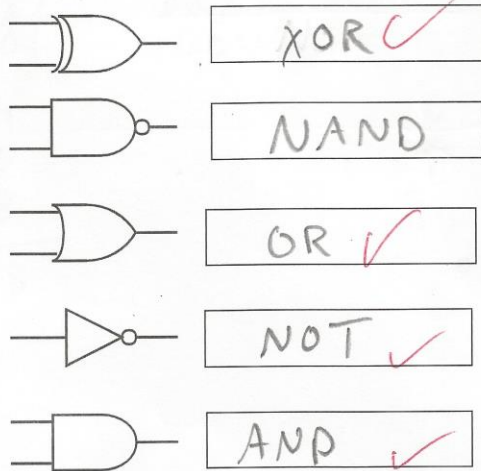
5

Answer here in 2's comp

010101000

6.0 Identify the logical function **NAME** of each of the following gates

[5]



5

7.0 Convert the Hexadecimal number 58 to its decimal format.

$$\begin{array}{r} \text{1286432} \\ 0101 \end{array} \cdot \begin{array}{r} 8 \\ 8421 \\ 1000 \end{array}$$
$$\begin{array}{r} 64 \\ 16 \\ 8 \\ \hline 88 \end{array}$$
$$\begin{array}{r} 16 \\ 24 \\ 64 \\ \hline 88 \end{array}$$

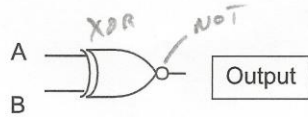
[5]

5

Answer here in decimal

88

8.0 Given the following logic gate, neatly fill in the truth table below.



A	B	Output
0	0	1
0	1	0
1	0	0
1	1	1

[5]

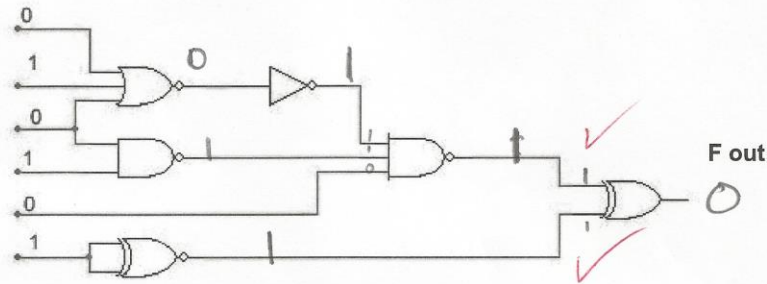
D
 AND OR NOR
 00 0 10 1 10 0
 11 1 01 1 01 0
 10 0 11 1 11 0
 01 0 00 0 00 1

XOR
 00 0
 10 1
 10 1
 01 0

5

9.0 Given the following logic block with the logical inputs as shown, what is the logic level at **F out**.

[5]



Answer here **F out**

5