***CS302 Assignment No. 1 Spring 2021***

***Digital Logic Design***

**Question #1**

**1.** **(ΩΩ∑↑↑∆>)C + (↑>Ω∆∆Ω)C = (?)C = (?)H**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Ω | Ω | ∑ | ↑ | ↑ | ∆ | > |
| 3 | 3 | 0 | 4 | 4 | 1 | 2 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ↑ | > | Ω | ∆ | ∆ | Ω |
| 4 | 2 | 3 | 1 | 1 | 3 |

**3304412**

3\*56 + 3\*55 + 0\*54 + 4\*53 + 4\*52 + 1\*51 + 2\*50

46875 + 9375 + 0 + 500 + 100 + 5 + 2

56857

**423113**

4\*55 + 2\*54 + 3\*53 + 1\*52 + 1\*51 + 3\*50

12500 + 1250 + 375 + 25 + 5 + 3

14158

56857 + 14158

(71015)10

|  |  |
| --- | --- |
| 5 | 71015 |
| 5 | 14203 – 0 |
| 5 | 2840 – 3 |
| 5 | 568 – 0 |
| 5 | 113 – 3 |
| 5 | 22 – 3 |
|  | 4 – 2 |

**(71015)10 = (↑>ΩΩ∑Ω∑)c**

|  |  |
| --- | --- |
| 16 | 71015 |
| 16 | 4438 – 7 |
| 16 | 277 – 6 |
| 16 | 17 – 5 |
|  | 1 – 1 |

**(71015)10 = (11567)H**

**1.** **(FDEA2)H – (8989F)H + (767657)O = (?)H**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| F | D | E | A | 2 |
| 15 | 13 | 14 | 10 | 2 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 8 | 9 | 8 | 9 | F |
| 8 | 9 | 8 | 9 | 15 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7 | 6 | 7 | 6 | 5 | 7 |
| 7 | 6 | 7 | 6 | 5 | 7 |

**151314102**

1\*168 + 5\*167 + 1\*166 + 3\*165 + 1\*164 + 4\*163 + 1\*162 + 0\*161 + 2\*160

4294967296 + 1342177280 + 16777216 + 3145728 + 65536 + 16384 + 256 + 0 + 2

5657149698

**898915**

8\*165 + 9\*164 + 8\*163 + 9\*162 + 1\*161 + 5\*160

8388608 + 589824 + 32768 + 2304 + 16 + 5

9013525

**767657**

7\*85 + 6\*84 + 7\*83 + 6\*82 + 5\*81 + 7\*80

229376 + 24576 + 3584 + 384 + 40 + 7

257967

(5657149698)10 – (9013525)10 + (257967)10 = (?)H

(5648136173)10 + (257967)10 = (?)H

(5648394140)10 = (?)H

|  |  |
| --- | --- |
| 16 | 5648394140 |
| 16 | 353024633 – 12 |
| 16 | 22064039 – 9 |
| 16 | 1379002 – 7 |
| 16 | 86187 – 10 |
| 16 | 5386 – 11 |
| 16 | 336 – 10 |
| 16 | 21 – 0 |
|  | 1 – 5 |

**(5648394140)10 = (150ABA79C)H**

**Question #2**

**1.** **-831.696972**

|  |  |
| --- | --- |
| 2 | 831 |
| 2 | 415 – 1 |
| 2 | 27 – 1 |
| 2 | 13 – 1 |
| 2 | 6 – 1 |
| 2 | 3 – 0 |
|  | 1 – 1 |

**-831 = -1101111**

.696972\*2 = 1.393944

.393944\*2 = 0.787888

.787888\*2 = 1.575776

.575776\*2 = 1.151552

.151552\*2 = 0.303104

**.696972 = .10110**

**-831.696972 = (-1101111.10110)2**

**1.** **(01000011111111111010100010101011)2 = (?)10**

0\*231 + 1\*230 + 0\*229 + 0\*228 + 0\*227 + 0\*226 + 1\*225 + 1\*224 + 1\*223 + 1\*222 + 1\*221 + 1\*220 +

1\*219 + 1\*218 + 1\*217 + 1\*216 + 1\*215 + 0\*214 + 1\*213 + 0\*212 + 1\*211 + 0\*210 + 0\*29 + 0\*28 + 1\*27

+ 0\*26 + 1\*25 + 0\*24 + 1\*23 + 0\*22 + 1\*21 + 1\*20

0 + 1073741824 + 0 + 0 + 0 + 0 + 33554432 + 16777216 + 8388608 + 4194304 + 2097152 + 1048576

+ 524288 + 262144 + 131072 + 65536 + 32768 + 0 + 8192 + 0 + 2048 + 0 + 0 + 0 + 128 + 0 + 32 + 0

+ 8 + 0 + 2 + 1

1140828331

**(01000011111111111010100010101011)2 = (1140828331)10**