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|  |  | **AMERICAN INTERNATIONAL UNIVERSITY – BANGLADESH**  **Faculty of Engineering** | | | | | | |
| **Course/Lab Name**: | | | Digital Logic and Circuits LAB | | | | | |
| **Semester:** Fall 2023-24 | | | | | **Term**: Mid | **Quiz**: 01 | **Total Marks**: 20 | **Time**: 30 Minutes |

**Question Mapping with Course Outcomes:**

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| **Item** | **COs** | **POIs** | **K** | **P** | **A** | **Marks** | **Obtained Marks** |
| **Q1** | **CO1** | **P.a.1.C3** | **K1** |  |  | **5** |  |
| **Q2** | **CO1** | **P.a.1.C3** | **K1** |  |  | **5** |  |
| **Q3** | **CO1** | **P.a.1.C3** | **K1** |  |  | **5** |  |
| **Q4** | **CO1** | **P.a.1.C3** | **K1** |  |  | **5** |  |
| **Total:** | | | | | | **20** |  |

**Student Information:**

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| **Student Name:** |  | **Student ID:** |  |
| **Section:** |  | **Department:** |  |

1. Prepare a NAND circuit with equation Y= (AB+AC)’. [5]

2.For the function F (A, B, C, D) = ∑(4,5,7,8,10,11,13,14) and d(A, B, C, D) = (0,1,2), where, d(A,B,C,D) represents the don’t care condition. [5]

a) Prepare the truth table.

b) Compute the simplified SOP using KMAP.

c) Show the simplified SOP using universal NOR gates only.

3.Show the following function with a 4-to-1 MUX with A and C as selector pins. 𝐅(𝐀, 𝐁, 𝐂) = ∑(𝟎, 𝟏, 𝟑, 𝟒, **7**) [5]

4. Prepare a comparator circuit for comparing two words, each of 3 bits of input using 1 bit block. [5]