**MUFFAKHAM JAH COLLEGE OF ENGINEERING & TECHNOLOGY**

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

**B.E. CSE (AI&ML) AICTE – III SEM 2022-3**

**INTERNAL EXAMINATION – I DECEMBER 2022**

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| **Course Code** | **ES302EC** | **Total Marks** | 20 |
| **Course Name** | **Digital Electronics** | **Date & Time** | 07-12-2022 & 10 AM – 11 AM |
| **Branch-Code** | **AIML** | **Duration** | 1 Hour |

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| **PART – A ( 3\*2 = 6 Marks)** | | | | |
| **ANSWER**  **ALL THE QUESTIONS (SHORT ANSWER TYPE)** | | **(6 M)** | **CO’s** | **BTL** |
| 1 | For the given figure No. 1, derive the Boolean expression of Y.    Figure No. 1 | 2M | 1 | 3 |
| 2 | Draw three variable K-map format. | 2M | 1 | 1 |
| 3 | Realize the following logic operations using only NAND gates: AND, OR, NOT. | 2M | 1 | 2 |
| **PART – B ( 2\*7 = 14 Marks )** | | | | |
| **ANSWER ANY TWO QUESTIONS (LONG ANSWER TYPE)** | | **(14M)** | **CO’s** | **BTL** |
| 4 | a) Draw the circuit diagram of BCD to 7 segment decoder and write its truth table. | 7M | 2 | 3 |
| b) |  |  |  |
| 5 | a) Minimize the following expression using K-map. f (P, Q, R, S) = Σ m (0, 1, 4, 5, 7, 8, 9, 12, 13, 15). | 7M | 1 | 3 |
| b) |  |  |  |
| 6 | a) Describe function of full subtractor circuit with its truth table, K-map  simplification and logic diagram. | 7M | 2 | 3 |
| b) |  |  |  |