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| **P.V.P Siddhartha Institute of Technology** |
| **Department of Computer Science and Engineering** |
| **Course: B.Tech** | **Year: II** | **Semester: I** | **Descriptive: I** | **A.Y:2024-25** |
| **Subject Code: 23ES1304** | **Subject Name: Digital Logic & Computer Organization** | **Regulation:PVP23** |
| **Duration:1 hr 30 min** | **Maximum Marks:30 Marks** | **Date:18-09-24** | **Session: F.N** |
| **Answer ONE Question from each section. Each Question carries 10 Marks. 3×10M=30M** |
| **Q. No**  | **Question** | **Marks** | **CO** | **Level** |
| **1 a)** | Translate the following base conversions.i) (110011.101)2 = ( )10ii) (385)10 = ( )8iii) (146)10 =( )2iv) (1A7)16 =( )10 | **5** | CO1 | L2 |
| **1 b)** | Apply the Boolean laws to simplify the following expressions:i) (A + C)(AD + AD) + AC + Cii) A’B(D’+C’D)+B(A+A’CD) to ONE literal  | **5** | CO3 | L3 |
|  | **OR** |  |  |  |
| **2 a)** | Show the subtraction operation using 2’s complement(10110)2 - (11101)2 | **5** | CO1 | L2 |
| **2 b)** | Apply K-Map method to simplify the following Boolean function:i) F(A, B, C, D) =∑m (0,4,8,10,12,13,15)ii) F(A,B,C,D) = π (3,5,7,8,10,11,12,13) | **5** | CO3 | L3 |
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| **3 a)** | Construct the Full Adder with the following steps:i) Symbolic Representationii) Truth Tableiii) Logic Diagram | **5** | CO4 | L3 |
| **3 b)** | Construct the circuit diagram for Four‐Bit Universal Shift Register. | **5** | CO4 | L3 |
|  | **OR** |  |  |  |
| **4 a)** | Construct 4X2 Priority Encoder with a neat sketch. | **5** | CO4 | L3 |
| **4 b)** | Compare SR and JK Flip-Flops. | **5** | CO4 | L4 |
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| **5 a)** | Perform BCD Addition on 323 + 728. | **5** | CO1 | L2 |
| **5 b)** | Apply K-Map method to simplify the following Boolean function:i) F(A,B,C,D) = ∑(4,5,6,7,12,13,14)+d(1,9,11,15)ii) F(A,B,C,D) = ∑(2,3,6,7)+d(4,5) | **5** | CO3 | L3 |
|  | **OR** |  |  |  |
| **6 a)** | Implement F(A,B,C) = =∑m (2,3,6,7) using 4X1 MUX. | **5** | CO4 | L4 |
| **6 b)** | Design 4 bit Asynchronous up counter using T flip-flop. | **5** | CO4 | L3 |

Course Coordinator

Module Coordinator Program Coordinator