Code No: 23ES1304

**PVP23**

**PVP Siddhartha Institute OF TECHNOLOGY**

**(Autonomous)**

**DIGITAL LOGIC & COMPUTER ORGANIZATION**

**(Common to CSE, IT)**

**Duration: 3 Hours Max. Marks: 70**

Note: 1. This question paper contains two Parts A and B.

2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.

3. Part-B contains 5 essay questions with an internal choice from each unit. Each

question carries 10 marks.

4. All parts of Question paper must be answered in one place

PART-A 10 x 2 = 20 Marks

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| --- | --- | --- | --- |
| **Q.No.** | **QUESTION** | Blooms Level | CO |
| 1 a) | Convert the hexadecimal number 3A7F to its binary equivalent. | L2 | CO1 |
| 1 b) | Obtain the 2’s complement for 1101010101. | L1 | CO1 |
| 1c) | Draw the circuit diagram for Full adder. | L1 | CO4 |
| 1d) | Differentiate Synchronous and Asynchronous counter | L2 | CO4 |
| 1e) | Explain the difference between direct addressing mode and indirect addressing mode. | L2 | CO2 |
| 1 f) | Draw the hardware for signed magnitude addition and subtraction. | L1 | CO1 |
| 1 g) | Define Hit Ratio. | L1 | CO1 |
| 1 h) | Define Address Space and Memory Space. | L1 | CO1 |
| 1 i) | Define polling. | L1 | CO2 |
| 1 j) | Define interrupt Cycle. | L1 | CO2 |

**PART –B**

**5x10=50 Marks**

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| --- | --- | --- | --- | --- |
|  |  | Blooms Level | CO | Max. Marks |
| **UNIT-I** | | | | |
| 2(a) | Perform the BCD Addition for the given Numbers  i) 984 and 599 ii) 429 and 476 | L2 | CO1 | 5 M |
| 2(b) | Simplify the Boolean expressions to minimum number of literals  i) (A + B)(A + C’ )(B’ + C’ )  ii) AB + (AC)’ + AB’C (AB + C)  iii) (A+B)’ (A’+B’)’ | L3 | CO1 | 5 M |
| **OR** | | | | |
| 3 | Minimize the following expressions using K-map:  a) F(W,X,Y,Z) = Σm(4,5,7,12,14,15) +d(3,8,10)  b) F(A,B,C,D) = ∑m(1,3,7,11,15) + d(0,2,5) | L3 | CO3 | 10M |
| **UNIT-II** | | | | |
| 4(a) | Obtain the function f(A,B,C,D) = Σ(1,2,3,4,6,7,8,10,12,14,15) and design a  i) 8X1 MUX ii) 4X1 MUX | L3 | CO4 | 5 M |
| 4(b) | Compare D flip flop and T flip flop. | L4 | CO4 | 5 M |
| **OR** | | | | |
| 5(a) | Develop the characteristic equation for JK flip flop. | L2 | CO4 | 5 M |
| 5(b) | Explain 4 bit binary down synchronous counter. | L2 | CO4 | 5 M |
| **UNIT-III** | | | | |
| 6 | Demonstrate the organization of a 64 - word register stack | L2 | CO2 | 10 M |
| **OR** | | | | |
| 7 | Explain addition and subtraction with 2’s compliment data | L2 | CO2 | 10 M |
| **UNIT-IV** | | | | |
| 8 | Explain different types of ROM chips | L2 | CO1 | 10 M |
| **OR** | | | | |
| 9 | Analyze the concept of virtual memory with the help of an example. | L4 | CO1 | 10 M |
| **UNIT-V** | | | | |
| 10(a) | Differentiate I/O bus verses Memory bus | L4 | CO2 | 5 M |
| 10(b) | Explain the purpose I/O interfaces between internal storage and external I/O devices. | L2 | CO2 | 5M |
| **OR** | | | | |
| 11 | Explain the interrupt cycle execution with the help of neat diagram | L2 | CO2 | 10 M |

**Course Coordinators**

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