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| **P.V.P SIDDHARTHA INSTITUTE OF TECHNOLOGY (AUTONOMOUS)** |
| **BRANCH : Computer Science and Engineering** | **REGULATION : PVP-20** |
| **Course: B.Tech** | **SUBJECT : Fundamentals of Digital Logic Design** |
| **SubjectCode:20CS3301** | **Year and Semester: II Year / I Sem** | **Section: I** |
| **Academic Year:2023-24 (Semester-I)** |
| **ASSIGNMENT-I** |

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| **Q.NO** | **QUESTION** | **CO** | **LEVEL** |
| 1 | 1. Select The base (or radix) of the number system such that the following equation holds is 312/20=13.1
2. 73x (in base-x number system) is equal to 54y(in base-y number system), the possible values of x and y are.
 | **1** | **L3** |
| 2 |  Consider the following Boolean expression for F(P,Q,R,S)=PQ+P’QR+P’QR’S. Calculate The minimal sum-of-products form of F is | **2** | **L3** |
| 3 | 1. Simplify and draw circuit for simplified expression: A(BC+ABC)+AC
2. Reduce A’C’+ABC+AC’ to 3 literals

 ABC’D+A’BD+ABCD to 2 literals A’B(D’+C’D)+B(A+A’CD) to 1 literal | **2** | **L3** |
| 4 | 1. Simplify the following Boolean function using K-Map

F(A,B,C)=A’C+A’C+AB’C+BCF(x,y,z)=xy+x’y’z’+x’yz’1. Reduce the following expression using K-map and implement using NAND gates

F(A,B,C,D)= ∑(2,3,6,7,8,10,11,13,14)1. Reduce the following expression using K-map and implement using NOR gates

*F=∏*M(2,8,9,10,11,12,14) | **2** | **L3** |
| 5 | 1. Given two input bits A and B, produce three outputs X, Y, and Z so that X is 1 only when only when A < B, Y is 1 only when A > B, and Z is 1 only when A = B.
2. A bank wants to install an alarm system with 3 movement sensors. To prevent false alarms produced by a single sensor activation, the alarm will be triggered only when at least two sensors activate simultaneously.

Analyze the scenario and design combinational circuit. | **3** | **L4** |