**MICROPROCESSORS LABORATORY**

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| **Exp. No.** | **Contents of the Experiment** | **Hours** | **COs** |
| 1 | 1. Write an ALP to conduct binary search for unsorted array of N numbers. 2. Read the status of eight input bits from the Logic Controller Interface and display ‘FF’ if it is the parity of the input read is even, otherwise display 00. | 3 | CO1 |
| 2 | 1. Read an alphanumeric character and displays its equivalent ASCII code at the centre of the screen. 2. Read the status of two 8-bit inputs (X & Y) from the Logic Controller Interface and display X\*Y. | 3 | CO2 |
| 3 | 1. Write an ALP to read an 8-bit number from the keyboard and check whether it is a prime number or not. 2. Implement a BCD Up-Down Counter on the Logic Controller Interface. | 3 | CO3 |
| 4 | 1. Write an ALP to read a string from the keyboard and check whether it is a palindrome or not. 2. Display messages “DSCE” and “4CSE” alternately with flickering effects on a 7-segment display interface for a suitable period of time. Ensure a flashing rate that makes it easy to read both the messages (Examiner does not specify these delay values nor is it necessary for the student to compute these values). | 3 | CO4 |
| 5 | 1. Write an ALP to read two strings, store them in locations STR1 and STR2. Check whether they are equal or not and display appropriate messages. Also display the length of the stored strings. 2. Convert a 16-bit binary value (assumed to be an unsigned integer) to BCD and display it from left to right and right to left for specified number of times on a 7-segment display interface. | 3 | CO6 |
| 6 | 1. Write an ALP to separate even and odd numbers from N array elements. 2. Scan an 8 x 3 keypad for key closure and to store the code of the key pressed in a memory location or display on screen. Also display row and column numbers of the key pressed. | 3 |  |
| 7 | 1. Write an ALP to generate and print first N Fibonacci numbers. 2. b. Drive a Stepper Motor interface to rotate the motor in specified direction (clockwise or counter-clockwise) by N steps (Direction and N are specified by the examiner). Introduce suitable delay between successive steps. | 3 | CO6 |
| 8 | 1. Compute nCr using recursive procedure. Assume that ‘n’ and ‘r’ are non-negative integers. 2. Display the system time on a 7-segment display interface. | 3 | CO4 |
| 9 | 1. Develop an assembly level program to display the system date at the centre of the screen. 2. Generate the Sine Wave using DAC interface (The output of the DAC is to be displayed on the CRO). | 3 | CO3 |
| 10 | 1. Read a pair of input co-ordinates in BCD and move the cursor to the specified location on the screen. 2. b. Drive an elevator interface in the following way: 3. Initially the elevator should be in the ground floor, with all requests in OFF state. 4. When a request is made from a floor, the elevator should move to that floor, wait there for a couple of seconds (approximately), and then come down to ground floor and stop. If some requests occur during going up or coming down they should be ignored. | 3 | CO2 |