

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### IV SEMESTER B.TECH. CSE

#### Internal Assessment 3

#### EMBEDDED SYSTEMS [CSE 2223]

#### NOTE:

1. ANSWER ALL THE QUESTIONS.
2. Draw the schematic diagram representing the connections between LPC1768 and the respective hardware units for all the questions.

#### Questions:

1. Write an Embedded C Program to turn on the LEDs in the LED unit as shown in the following **Pattern** if SW2 is pressed. Turn off all the LEDs when SW2 is not pressed. Assume that the LED unit is connected to the port pins P0.4 to P0.11 and SW2 is connected to P1.26.

#### Pattern:

	LED8	LED7	LED6	LED5	LED4	LED3	LED2	LED1
Iteration 1:	1	1	1	1	1	1	1	1
Iteration 2:		1	1	1	1	1	1	
Iteration 3:			1	1	1	1		
Iteration 4:				1	1			
Iteration 5:				1	1			
Iteration 6:			1	1	1	1		
Iteration 7:		1	1	1	1	1	1	
Iteration 8:	1	1	1	1	1	1	1	1

Pattern should be repeated as long as the switch is pressed.

2. Write an embedded C program to read input from 2\*4 matrix of the keypad and to display the input value on SSD U8. The keypad is configured to read values from 0 to 7. Configure port pins 0.4 to 0.7 for columns of keypad, 0.8 to 0.11 for rows of keypad and 1.15 to 1.18 as enable lines for SSDs and 2.0 to 2.7 as data lines for SSDs.

0	1	2	3
4	5	6	7

**Keypad Configuration**

3. Write an embedded C program to rotate a stepper motor by 90 degrees in both clockwise and counterclockwise directions using full-step control. Assume port pins 3.23 to 3.26 are connected to the stators of the stepper motor. Use timer0 for delay assuming PCLK=25 MHz and Timer resolution as 100 microseconds.
  
4. Write an embedded C program that displays a message for 5 seconds and then clears the LCD screen. Configure port pins 1.10 to 1.13 as data lines and pins 1.14 and 1.15 as control lines for LCD. Use timer0 for delay assuming PCLK=12 MHz and Timer resolution as 10 microseconds.