B. E. (ELECTRICAL ENGINEERING) EXAMINATION, 2023

3rd Year, 2nd Semester, Supplementary

SUBJECT: - PROGRAMMABLE LOGIC AND MICROCONTROLLER

Time: Three hours   Full Marks: 100

Part - I

Answer any *three* form the following questions.

Two marks are for neatness and well organized answers

1. Briefly discuss any two of the following.   8x2
    a) SRAM cell;
    b) Macrocell;
    c) CAD;
    d) Features of FPGA.

2. a) Explain with proper example, how transistor can be used as   10
        logic block in FPGA.
    b) Discuss the advantages and disadvantages of CPLD.   6

3. a) Draw a block diagram and discuss the functions of each block of   10
        a PLA device.
    b) Develop a full adder using PLA   6

4. a) Discuss the features of Xilinx XC4000 with proper circuit   10
        diagram.
    b) How can ROM be used as PLD?   6

5. a) Write a VHDL program to develop a 2 to 4 decoder with proper   8
        circuit diagram and truth table. Also write a proper test bench
        program for the decoder.
    b) How many different states are available as per IEEE standards   8
        in VHDL? Write down their names and symbols.

PTEE 3ᴿᴰ YEAR 2ᴺᴰ SEMESTER EXAMINATION, 2023
Supplementary

SUBJECT: - PROGRAMMABLE LOGIC AND MICROCONTROLLER

Full Marks 100

Time: __Three hours/__   (50 marks for each part)

Use a separate Answer-Script for each part

No. of Questions	PART II	Marks
	Answer any FIVE:	
1.	Write a program to generate a square wave of frequency 800Hz at a port pin of microcontroller. Use in-built timer of the microcontroller. Justify your solution.	10
2.	Write a program to add two 16-bit numbers. The result should be stored in two consecutive registers. Explain your program.	10
3.	Present a comparative study between microprocessor and microcontroller.	10
4.	Two input pins of a port are read. Write a program to AND them, OR them and XOR them. Explain your solution.	10
5.	Write a program to implement the following tasks: (i) Left shift a byte by two bit positions (ii) Set D7 bit and reset D4 bit of a given byte (iii) Enable in-built timer (iv) Implement a loop three times (v) Complement bits of a given byte	10
6.	Write a program to test whether a given byte is even or odd.	10
7.	Write a program to blink an LED with a frequency of 500Hz, at 80% duty cycle. Assume whatever is required and state clearly your assumptions.	10