Reg.No.

Bansilal Ramnath Agarwal Charitable Trust's
VISHWAKARMA INSTITUTE OF TECHNOLOGY, PUNE – 411037.
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)

Examination: ESE

Year: SY-IT **Branch:** IT

Subject: Digital Electronics and Microprocessor **Subject Code:** IT2275

Max. Marks: 60 **Total Pages of Question Paper:** 2

Day & Date: wed, 08/5/24 **Time:** 2·30pm to 4·30pm

Instructions to Candidate

1. All questions are compulsory.
2. Neat diagrams must be drawn wherever necessary.
3. Figures to the right indicate full marks.

Q. No.	CO No	BT* No		Max marks
Q. 1.			**Attempt the following**	
A	1	1,2	Design BCD to Excess 3 code converter using logical gates.	6M
B	1	1,2	What is meant by Standard SOP form? Convert the following Boolean function into standard SOP and express it in terms of Min-terms $Y(A, B,C,D)= ABC+\bar{B}CD+\bar{A}B\bar{C}$	4M
Q. 2.			**Attempt the following**	
A	2	3	Design 2 bit comparator using 4:1 Multiplexer.	6M
			Attempt any one of the following	
B	2	3	Design full adder using 3:8 decoder	4M
C	2	3	Implement following SOP using 3:8 decoder $Y(A,B,C,D)= \sum m(0,1,2,4,7,9,10,13,14)$	4M
Q. 3.			**Attempt the following**	
A	3	2	Design 2 bit Synchronous up-down counter using M/S JK FF with neat diagram.	6M
			Attempt any one of the following	
B	3	1,2	Draw the circuit diagram for M/S JK FF and discuss race around condition.	4M
C	3	1,2	Describe with neat block diagram T flip flop and create excitation table for T Flip Flop.	4M
Q. 4.			**Attempt the following**	
A.	4	1	Elaborate the memory segmentation in the 8086 microprocessor with neat diagram and calculate the Physical address if CS: 2AB5 and IP: 13C6.	6M

			Attempt any one of the following	
B.	4	2	Identify the addressing modes for the following instructions and justify the same. Calculate the Effective address for both instructions: Given: BX=0002H and SI=1100H 1. MOV AX, 50H[BX+04H] 2. MOV AX, [SI]	4M
C.	4	2	Give detail working operations of the following instructions of 8086 1. DIV 2. CMP 3. JLE 4. CALL	4M
Q. 5.			**Attempt the following**	
A	5	2	Distinguish between minimum mode and maximum mode w.r.t pin functions	6M
B	5	1	Draw the timing diagram for Memory read of 8086	4M
Q. 6.			**Attempt the following**	
a)	6	2,3	Draw the Interrupt vector table and discuss the NMI in detail.	6M
b)	6	2,3	Draw the block diagram of Priority Interrupt Controller 8259	4M

CO Statements:

The student will be able to –

1. Learn and illustrate the standard representation for logical functions
2. Explore the knowledge of Digital logic circuits.
3. Design applications based on combinational and sequential circuits.
4. Demonstrate the concepts of microprocessor systems
5. Adapt the knowledge based on microprocessor instructions.
6. Understand the concept of interrupts and its service routine..

***Blooms Taxonomy (BT) Level No:**

1. Remembering; 2. Understanding; 3. Applying; 4. Analyzing; 5. Evaluating; 6. Creating