Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester IV (EC)

CBCS Regular Examination, April-June 2017

2EC404: Microprocessor Architecture and Programming

MAX. Time: 3 Hrs.] **[MAX. Marks: 60**

Instructions:

1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

Q:1	**(A)**	Explain the memory mapping scheme and address range of 2K (2048x8) memory along with the chip select logic.	**5**
	(B)	Explain the generation of Read/Write control signals for memory and I/O with the help of schematic.	**5**
		OR	
Q:1	**(A)**	What is operating system? Explain its role in computer system.	**5**
	(B)	Draw the timing diagram of IN instruction.	**5**
Q:2	**(A)**	List out the microprocessor initiated operations and explain them in detail.	**5**
	(B)	Classify different types of computer memory.	**5**
		OR	
Q:2	**(A)**	What is interrupt? Write a short note on hardware interrupt of 8085 MP.	**5**
	(B)	What is FLAG? Explain different flag bits used in 8085 MP.	**5**
Q:3		1. Design a seven-segment LED output port with a device address 30H, using a 74LS138 decoder, a 74LS20, a 74LS02 and a common anode seven segment LED.	**10**
		2. Given WR and IO/M signals from the 8085, generate the IOW control signal.	
		3. Explain the binary codes required to display 0 to F Hex digits at the LED.	
		4. Write instructions to display digit A at the port.	

SECTION-II

Q: 4 (A) Describe following instructions : 5
(1) LXI H,2050H (2) ADD C (3) JP C050H (4) HLT (5) INX H

(B) Eight bytes of data are stored in memory location starting at D010H. Add the data bytes. Use register B to save any carries generated, while adding the data bytes. Store the sum at two output ports 02H and 03H. Data(H):56,82,E4,B5,02,73,65,44 5

OR

Q: 4 (A) Describe following instructions : 5
(1) LDA 3060H (2) IN 05H (3) ADI 53H (4) ORA B (5) DCX D

(B) Write a program to count continuously in hexadecimal from FFH to 00H in a system with a 0.5 μs clock period. Use register C to set up a one millisecond (ms) delay between each count and display the numbers at output port 01H. 5

Q: 5 (A) Calculate the time delay for loop 2 in following program if clock frequency is 1 MHz. 4

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        MVI B,25H
LOOP2:MVI C,45H
LOOP1:DCR C
        JNZ : LOOP1
        DCR B
        JNZ :LOOP2
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(B) Write a program to convert any binary data to BCD code. 5

(C) Why counter is required in programming? 1

OR

Q: 5 (A) Accumulator contains 95H and initially carry flag is reset. Discuss about the status of accumulator and carry flag after execution of following instructions : 4
(1) RAL (2) RAR

(B) Write a program to convert any 8 bit binary number to ASCII code. 5

(C) Why NOP instruction is used in programming? 1

Q: 6 (A) Calculate maximum time delay generated using one register method. 5

(B) What is subroutine? Discuss about CALL and RET instructions. 3

(C) Write instructions to read the data at input PORT 07 H and at PORT 08 H. Display the input data from PORT 07 H at output PORT 00 H, and store the input data from PORT 08 H in register B. 2

End of Paper