BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER : V**
BRANCH: CSE **SESSION : MO/19**

SUBJECT: EC4205-MICROPROCESSOR AND MICROCONTROLLER

TIME: 3 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What is meant by variable machines cycle? How is it achieved?	[2]
Q.1(b)	What is the function of ALE pin in 8085? Explain by giving suitable diagram.	[4]
Q.1(c)	Which are the status signals available in 8085? Which status do they reflect? What are their functions?	[6]
Q.2(a)	What will be the status of A_8 – A_{15} pins during the execution of IN and OUT instructions?	[2]
Q.2(b)	Explain the various steps involved in executing a CALL instruction.	[4]
Q.2(C)	Write a program to choose only BCD numbers from a group of 12 bytes residing in locations starting from 0C20H and arrange them in descending order in location 0C41H. Keep the count (BCD) in 0C40H.	[6]
Q.3(a)	What is the advantage of Interrupt driven I/O operation over the Status check I/O.	**[2]**
Q.3(b)	Explain DI and EI instruction by giving suitable examples.	[4]
Q.3(c)	Interrupt requests are arriving at RST 6.5 pin, at a rate of 200 requests/second. Write a program to utilize these pulses, to design a real time clock, which will count up to 1 hour. Keep the count of seconds, minutes and hour in 3 memory locations SECOND, MINUTE and HOUR respectively. Once 1 hour is over, disable the interrupts. Assume interrupting pulses are sufficiently long enough to be recognized.	[6]
Q.4(a)	What is meant by BSR mode in 8255?	[2]
Q.4(b)	Explain the principle of Successive approximation A/D Converter by giving suitable diagram.	[4]
Q.4(c)	An 8-bit A/D converter is connected to port A of 8255 chip. Write an 8085 program to input 240 bytes of ADC data at regular interval of 30 seconds and output them to a display connected to port B. Use PC_7 pin for sending SOC and PC_0 pin for checking EOC. Assume delay subroutine for 30 second is available at 3000H.	[6]
Q.5(a)	Explain the architecture of 8253 timer.	[2]
Q.5(b)	What is 2key lockout and N key rollover in 8279?	[4]
Q.5(C)	What are the effects of gate signals in different modes of 8253 timer? Explain by giving suitable waveforms.	[6]
Q.6(a)	What do you mean by pipelined architecture? How is it implemented in 8086?	[2]
Q.6(b)	Explain the concept of segmented memory? What are its advantages?	[4]
Q.6(C)	Explain the functions of various resisters of 8086.	[6]
Q.7(a)	Explain PSW SFR of 8051.	[2]
Q.7(b)	Explain SJMP, AJMP and LJMP instructions of 8051.	[4]
Q.7(c)	Write a 8051 based program to transfer 10 bytes residing in external RAM starting from 2400H to internal RAM starting from 30H. Use Register bank 3 only for counting and other purposes.	[6]

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