COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)
SHIVAJI NAGAR, PUNE - 411 005

END Semester Examination

Microprocessor Techniques

Course: B.Tech

Branch: Computer Engineering & Information Technology

Semester: Sem IV

Year: 2017-2018

Max.Marks:60

Date:28/04/2018

Duration: 3 Hours

Time:-10:00am TO 1:00pm

Instructions:

MIS No. | | | | | | | | | | |

1. Figures to the right indicate the full marks.
2. Mobile phones and programmable calculators are strictly prohibited.
3. Writing anything on question paper is not allowed.
4. Exchange/Sharing of anything likes stationery, calculator is not allowed.
5. Assume suitable data if necessary.
6. **Write your MIS Number on Question Paper**
7. **Attempt all questions.**
8. Draw neat figures wherever required.

		Marks
Q.1	Design 8086 based system having following i) 32 KB RAM space using 4KB RAM chips ii) 32 KB EPROM space using 4KB EPROM chips iii) 8255 Programmable Peripheral Interface at address F7F0H onwards Give the neat system schematic using needed supporting chips and give the address range for each of the memory chips and peripheral chip.	**12**
Q.2	Assume an array of twenty elements is available from **MX_ARRAY** onwards, wherein each element is unsigned sixteen bits. Write a program in 8086 assembly language for finding the smallest element of the array and storing the smallest element at **SMALLEST**. Neatly document with appropriate comments.	**8**
Q.3	Answer the following with respect to priority interrupt controller 8259	
	i) List the actions taken by 8259 and 8086 for the interrupt request by a resource on one of the IRQ lines of 8259?	**5**
	ii) What is the purpose of in service register?	**2**
	iii) What is the role of CAS2, CAS1, CAS0 signals?	**3**

P.T.O.

Q.4 Assume a text message having multiple words is available from **MESSAGE** onwards. The text message is ended with **"$"**. **10**

Write a program in 8086 assembly language to count the words in the text message, storing the count in packed BCD format at **COUNT** and displaying following

i) The text message on screen
ii) Count of words in the text on the next line

Neatly document with appropriate comments.

Q.5 Answer **any THREE** of the following **12**

i) What is the limit on number of keys in key matrix. in scanned keyboard mode with respect to Keyboard & display controller 8279? Give reason.

ii) Describe the Rate generator mode in 8254?

iii) Assume the content of registers as per the following
DS=2000H. ES=4000H. SS=6000H. BX=1000H and BP=5000H.
What will be the address of memory referred while executing following instruction?
MOV AX, [BP]

iv) What are the HOLD and HLDA signals on 8086?

Q.6 Explain the following with respect to DMA Controller 8237 **8**

i) Auto initialization
ii) Rotating priority
iii) Memory to memory transfer
iv) EOP# signal

OR

Answer the following with respect to USART 8251 **8**

i) What is the purpose of TXRDY and TXE Signals?
ii) How to have received character and to confirm the character received is error free?