



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: 2018-2019

Max.Marks:60

Duration: 3 Hours

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

Date:8/05/2019

Instructions:

MIS No.

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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 stationery, calculator etc. 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.

Q.1

Design 8086 based system having following

- i) 256 KB RAM space using 32 KB RAM chips
- ii) 256 KB EPROM space using 32 KB EPROM chips
- iii) 8255 Programmable Peripheral Interface at address 7FF0H onwards

Give the neat system schematic using needed supporting chips and give the address range for each of the memory chips and peripheral chip.

Marks
12

Q.2

Assume given array of thirty elements is available from **MX_ARRAY** onwards, wherein each element is signed 16 bit number.

Write a program in 8086 assembly language for separating positive elements, negative elements amongst the given array and for storing positive elements amongst the given array from **P_ARRAY** onwards and negative elements amongst the given array from **N_ARRAY** onwards.

Neatly document the program with appropriate comments.

9

Q.3

Explain the following

- i) Action taken by DMA Controller 8237 for the DMA request on any of the DRQ lines.
- ii) Action taken by 8086 microprocessor to serve the interrupt occurring on INTR pin.

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P.T.O.

Q.4 Assume a text message in uppercase ended with "S" is available from **MESSAGE** onwards. 9

Write a program in 8086 assembly language to count the occurrence of character "A" in the text message, to store the count in packed BCD format at **COUNT** and to display following

- i) The text message on screen
 - ii) Count of occurrence of character "A" in the given text on the next line
- Neatly document the program with appropriate comments.

Q.5 Describe any three of the following 12

- i) Rate generator mode with respect to Programmable Interval Timer-8253/8254
- ii) Software triggered mode with respect to Programmable Interval Timer-8253/8254
- iii) Purpose of cascade lines CAS0, CAS1, CAS2 in Programmable Interrupt controller-8259
- iv) Operation of programmable peripheral interface 8255 port PB as an input in mode 1 with neat timing diagram.

Q.6 Answer the following with respect to USART 8251 8

- i) What is the purpose of TXRDY and RXRDY Signals?
- ii) What is the purpose of DTR#, DSR#, RTS# and CTS# Signals?

OR

Explain the following with respect to Keyboard and display controller 8279 8

- i) 2 Key Lockout and N Key Rollover
- ii) FIFO RAM and DISPLAY RAM