

Code :IC3224

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**III B.Tech II Semester(R05) Supplementary Examinations, April/May 2011**  
**MICROPROCESSORS & MICROCONTROLLERS**  
 (Instrumentation & Control Engineering)

(For students of RR regulation readmitted to III B.Tech II Semester R05)

Time: 3 hours

Max Marks: 80

**Answer any FIVE questions**  
**All questions carry equal marks**  
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1. Discuss the general functions of all general-purpose registers of 8086. Explain the special function of each register and instruction support for these functions.
2. (a) What is a recursive procedure? Write a recursive procedure to calculate the factorial of number N, where N is a two-digit Hex number?  
 (b) What are the loop instructions of 8086? Explain the use of DF flag in the execution of string instructions.
3. (a) What is the purpose of ALE, BHE, DT/ $\overline{R}$  and  $\overline{DEN}$  pins of 8086? Show their timing in the system bus cycle of 8086.  
 (b) Show the complete design to generate system address, data and control buses using the above pins, latches and transceivers.
4. (a) Draw the block diagram of 8255 and explain each block. Discuss different modes of operation.  
 (b) With neat layout, explain how a microprocessor can be used for data acquisition system using A/D converters and D/A converters.
5. (a) What are the MODEM control lines? Explain the function of each line? Discuss how MODEM is controlled using these lines with necessary sequence of instructions.  
 (b) Discuss the Command instruction and Status register format of 8251.
6. With detailed hardware and the associated algorithm, explain how a real time clock will be implemented in an 8086 based system.
7. It is necessary to interface 128KB SRAM and 32KB EPROM to an 8086 based system. The size of SRAM and EPROM chips is 16KB. Address map of SRAM is fixed from 00000H to 1FFFFH and that of EPROM is from F8000H to FFFFFH. Design the entire memory interface? Give the address map of individual chip.
8. Interface two 8255's to 8051 with starting address of 0F000H? Show the hardware design? Write the instruction sequence to initialize all ports of first 8255 as output ports in mode 0 and in the second 8255 port A as input in mode 1 and other ports as input in mode 0.

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