

(b) Explain the following terms with respect to an ADC : (i) Accuracy (ii) Resolution and (iii) Conversion time. 3

List the different types of ADC you know about. 2

Which of them need a built-in DAC ? Write a short note on methods of Digital to Analog conversion. 5

(c) What is the maximum clock frequency that can be input to an 8253 A timer ? Can you program an 8253 A so that gives a short high pulse at a regular interval of 10 mS ? Explain with a neat diagram your method. How you program your 8253 A ? Can you suggest any application in this entire question paper that may need such type of pulse generation ? 10

5 Answer any two parts : 2x5

- (a) Write short notes on :
  - (i) 8051 memory organization
  - (ii) 8051 bit manipulation instructions.
- (b) Write a short note on Pentium processor. 10
- (c) Compare the advantages and disadvantages of RISC and CISC. How their design concept and architecture differ ? Give examples. 10



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 3087** Roll No. 

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**B. Tech.**

**(SEM. V) EXAMINATION, 2008-09  
MICROPROCESSORS AND APPLICATIONS**

Time : 3 Hours] [Total Marks : 100

- Note :**
- (1) Answer all questions. All questions carry equal marks.
  - (2) Choices are internal to each question.
  - (3) Answers must be to the point.
  - (4) Assume missing information and/or data if necessary.

1 Answer any two parts :

(a) You want to attach 1 kB ROM with address 0000H-03FFH and 4 kB static RAM with address 2000H-2FFFH in a 8085 based system. You have sufficient supplies of 1 kB ROM chips and 1 kB RAM chips. Each of these memory chips have requisite number of address pins, one chip select ( $\overline{CS}$ ) pin, 8 data pins, two power supply pins and a  $\overline{RD}$  pin. Apart from these the RAM chips also have a  $\overline{WR}$  pin. Show the connection diagram of the memory bank with justification. You may use as many decoder and gate chips as you require. 10



(b) With a neat diagram describe the internal architecture of 8085. State the function of each block shown. 10

(c) With reference to 8085, show the timing diagram for the instruction ADD B. The diagram must show both the 'Fetch' and 'Execution' parts clearly demarcated. The instruction sheet shows 4 T-states against this instruction. Does your timing diagram conform to this view? If the memory is not 'Ready' where in the timing diagram the 'Wait State(s)' are inserted? 10

2 Answer any two parts :

(a) Ten integers of 1-word length are stored consecutively in the memory beginning from a given address (Choose any arbitrary value for the address). Write a program for 8086 to rearrange the integers so that the largest is now stored at the highest location address. Put meaningful comments to your program so that the logic/algorithm behind your program is clear. 10

(b) With examples explain the addressing modes available in the instruction set of 8086. 10

(c) Give very short answers to the following : 5×2

(i) How much memory can be attached to 8086? - Justify.

(ii) Apart from memory how many I/O devices may be accessed by 8088?

(iii) Contents of which register is modified in execution of 'Far Jump' but not 'Near Jump'?



(iv) If you compare the execution of a 'Call' and a 'Jump' instruction, is there any difference in changing the contents of any memory location?

(v) What is the difference between 8086 and 8088?

3 Answer any two parts :

(a) Explain the keyboard scanning technique of 8279. How many keys can be attached to it? How many simultaneous depression keys (like 'Shift', 'Alt', 'Ctrl' etc.) does it support? Explain your opinion. 10

(b) Explain the facilities available in 8259. What is its main application area? Explain the fixed and rotating priority properly. How does 8259 identify its own status as master or slave? How does it identify its own number while on job? 10

(c) Explain with a neat diagram the operation and programming of 8255. Where in a PC you may find it? 10

4 Answer any two parts :

(a) An 8-bit ADC starts converting when a 'high' pulse is obtained through its 'SC' pin. When it completes its conversion, it makes available the digital value through its 8 data pins and indicates the event by a 'low' signal through its 'EOC' pin. You want to interface this to an 8086 board through an 8255. 10

Draw a schematic diagram and write a supporting program for the interface.

