

Elements of Microprocessors

[REVISED COURSE]

CON/4993-06.

YM-6752

(3 Hours,)

[Total Marks : 100

Notes: * Question no one is compulsory
* Solve any four from remaining six questions

- Q.1a) Design 8086 based microcomputer system using minimum mode with following specification 12
- CPU working at 5Mhz
 - 32 KB SRAM (16K X 8 Device)
 - 32 KB EPROM (8 K X 8 Device)
- Clearly show address decoding with appropriate address map using exhaustive decoding. Draw a neat schematic.
- Q.1b) Explain interface of 8259 with 8085 in master slave mode with a neat schematic. 08
(Assume two slaves and 20 interrupting devices)
- Q.2a) State machine cycles required for each of the instructions of 8085 and hence state the number of T states 08
1. LHLD 8000H
 2. MVI M, 06H
 3. JNZ 7050H
 4. PCHL
- Q.2b) Explain the functional block diagram of 8255 PPI. Explain its BSR mode of operation with appropriate example. 12
- Q.3a) Identify the range of data that will be displayed on PORT 1. Justify the answer with explanation. 10
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MVI A, data
MVI B, 60H
MVI C, C8H
CMP B
JC Reject
CMP C
JNC Reject
OUT PORT 1
Reject: HLT

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- Q.3b) Explain control word register of 8354 Programmable Interval Timer. Hence find the control word necessary to initialize 8254 for loading 16 bit binary count in counter 2, mode 0. 10
- Q.4a) Write a program using 8085 instructions to find a square of a single digit number 08
- Q.4b) Calculate execution time if frequency of clock input of 8085 is 5 MHz. 08
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MVI B, 04H
MVI C, F0H
Loop: INR C
DCR B
JNZ Loop
HLT
    
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- Q.4c) Compare and contrast between 04
- RET and IRET
 - JMP and CALL
- Q.5a) Explain various techniques used to pass parameters to subroutines. 10
- Q.5b) Draw interface of 8086 - 8087 and explain its working with the help of queue status, request / grant and busy / test interface. 10
- Q.6a) Explain the interrupt structure used in 8086. Hence explain the Interrupt Acknowledge Cycle. 12
- Q.6b) Write an assembly language program using 8086 instructions for an up counter which counts from 00 to 7F (hexadecimal). It starts on occurrence of an interrupt and stops when maximum count has reached. 08
- Q.7a) What is segmented memory and what are its advantages? Explain logical and physical address in 8086. What are default segment assignments and what is segment override? Explain with suitable examples. 12
- Q.7b) Explain flag register of 8086. Show how direction flag is useful in string instructions. 08