

Total No. of Questions—12]

[Total No. of Printed Pages—4+2

Seat No.	
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S.E. (Computer Engineering) (Second Semester)

EXAMINATION, 2014

MICROPROCESSOR AND INTERFACING TECHNIQUES

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

N.B. :— (i) Answers to the two sections should be written in separate answer-books.

(ii) Answer any *three* questions from each section.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Figures to the right side indicate full marks.

(v) Use of calculator is allowed.

(vi) Assume suitable data if necessary.

SECTION I

1. (a) Draw and explain 8086 Internal Architecture in brief. [8]

(b) Explain the physical address formation in an 8086 microprocessor. [8]

P.T.O.

Or

- 2.** (a) Draw and explain the write timing cycle of 8086 microprocessor in minimum mode. [8]
- (b) State the difference between memory mapped I/O and I/O mapped I/O. [8]
- 3.** (a) Explain the following addressing modes with *one* example each :
- (i) Direct Addressing
 - (ii) Immediate Addressing
 - (iii) Base Register Addressing
 - (iv) Index Addressing. [8]
- (b) Write an Assembly Language Program to generate a delay of 1 sec using a microprocessor running at 5 MHz. Also show the delay calculation. [8]

Or

4. (a) Write an Assembly Language Program to mask the lower nibble of an 8 bit number. Assume the 8 bit number is in the AL register. Write appropriate comments. [8]

(b) Determine the register contents of AL, BL and the six status after the following instruction are executed : [8]

STC

MOV AL, 4CH

SBB AL, 3EH

XOR BL, BL

MOV [SI], BL

5. (a) State the difference between DOS calls and BIOS calls. [8]

(b) What is PSP ? Draw and explain the structure of PSP. [10]

Or

6. (a) What is TSR ? Explain the structure of TSR in detail. [10]

(b) Differentiate between .COM and .EXE files. [8]

SECTION II

7. (a) Draw and explain in brief the block diagram of 8255 PPI. [8]
- (b) An 8251 is to be initialized as follows :
- (i) 7 bits/character
 - (ii) Even parity
 - (iii) 1 stop bit
 - (iv) Baud rate factor $\times 64$
 - (v) DTR and RTS asserted
 - (vi) Error flag reset.

Write the sequence of instructions required to initialize an 8251 at addresses 80 H and 81 H. [8]

Or

8. (a) Explain with diagram successive Approximation ADC. [8]
- (b) Explain the working of LVDT with the help of a neat diagram. Also state the advantages and disadvantages of LVDT. [8]

9. (a) Draw and explain functional block diagram of 8279 keyboard and display Controller. [8]
- (b) What are the different modes of operation of 8253 timer ? Explain mode 2 and mode 4 with waveforms. [8]

Or

10. (a) Draw and explain the following 8279 commands :
- (i) Keyboard/display mode set command.
- (ii) Read FIFO/sensor RAM command. [8]
- (b) Explain the various data transfer modes of 8237/8257 in detail. [8]
11. (a) Draw and explain the minimum mode configuration of the 8086. [10]
- (b) Explain the status word and control word of 8087 Numeric Co-processor. [8]

Or

12. Design a 8086 based system with the following specifications : [18]

- (i) 8086 working at 10 MHz in maximum mode.
- (ii) 32 KB EPROM using 16 KB devices.
- (iii) 256 KB RAM using IC 62512. Clearly show the memory map.