

Total No. of Questions—12]

[Total No. of Printed Pages—4+2

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[4757]-187

S.E. (Computer) (Second Semester) EXAMINATION, 2015

MICROPROCESSORS AND INTERFACING TECHNIQUES

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

N.B. :— (i) Answer *three* questions from Section I and *three* questions from Section II.

(ii) Answers to the two sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Figures to the right indicate full marks.

(v) Use of calculator is allowed.

(vi) Assume suitable data, if necessary.

SECTION I

1. (a) Explain with neat diagram memory segmentation in 8086 micro-processor. [8]

(b) Explain the following 8086 signals : [4]

(i) INTR

(ii) DT/R

P.T.O.

- (iii) TEST
- (iv) ALE.
- (c) Draw and explain the flag register of 8086 microprocessor. [4]

Or

- 2. (a) Draw and explain the Read cycle timing diagram of 8086 in maximum mode. [6]
 - (b) State the difference between memory mapped I/O and I/O mapped I/O. [4]
 - (c) Draw block diagram of 8086 microprocessor and explain Execution Unit (EU). [6]
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- 3. (a) Explain the following addressing modes : [8]
 - (i) Register Addressing Mode
 - (ii) Based Index Addressing Mode
 - (iii) Register Relative Addressing
 - (iv) Relative Based Index Addressing.
 - (b) Explain with the example following instructions for 8086 : [8]
 - (i) XCHG
 - (ii) XLAT
 - (iii) MUL
 - (iv) LEA.

Or

4. (a) Explain PUBLIC and EXTERN assembler directives with the help of suitable example. [4]
- (b) Differentiate between the following : [8]
- (i) Macro and procedure with examples
- (ii) Near and Far Procedure.
- (c) Explain the following instructions of 8086 Microprocessor with example : [4]
- (i) ROR
- (ii) CLC.
5. (a) Draw and explain Block diagram of 8259 PIC. [8]
- (b) What does the CPU do when it receives an interrupt ? [6]
- (c) What is the difference between DOS and BIOS calls ? [4]

Or

6. (a) What are the components of MS-DOS ? Explain the steps by which MS-DOS is loaded after power on. [10]
- (b) Draw and explain the structure of program segment prefix clearly indicate offsets in the structure. [8]

SECTION II

7. (a) Draw and explain the functional internal block diagram of 8255.
What is the use of the IC ? [8]
- (b) What is D/A converter ? Which are different methods for D/A conversion ? Explain R2R ladder DAC with block diagram. [8]

Or

8. (a) With the help of block diagram explain various modes of operations of 8255. [8]
- (b) Define the following terms for D/A converters : [8]
- (i) Resolution
 - (ii) Accuracy
 - (iii) Monotonicity
 - (iv) Conversion time.
9. (a) Draw and explain the complete interface diagram between 8086 and 8279 keyboard/display controller with 4×4 keyboard matrix. Also write the instructions in 8086 assembly to initialize 8279. [8]
- (b) Draw the interfacing diagram of 8254 with 8086. [8]

Or

10. (a) Explain the following modes of operation for DMA in detail : [6]

- (i) Single transfer
- (ii) Block transfer
- (iii) Demand transfer mode.

(b) Explain control word format of 8254. [5]

(c) What is DMA ? Explain the mechanism by which 8237 DMA controller is used for data transfer in DMA operation. [5]

11. (a) Draw the 8086 maximum mode system configuration. Give the necessity of each chip used in the system. [10]

(b) Explain the following instructions of NDP : [8]

- (i) FMUL
- (ii) FSTP
- (iii) FILD
- (iv) FISUB.

Or

12. (a) Explain concept of stack in 8087 NDP with suitable diagram. [8]

(b) Explain the following instructions of NDP : [10]

(i) FXCH

(ii) FADDP

(iii) FSQRT

(iv) FABS

(v) FIST.