

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.

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