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# RM-7069

## B. E. III (Sem. VI) (Computer) Examination

**May / June – 2010**

## Advance Microprocessor Systems & Applications

Time : **3** Hours] [Total Marks : **100**

**Instruction :**

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
**Fillup strictly the details of ☛ signs on your answer book.**

Name of the Examination :

☛ **B. E. 3 (Sem. 6) (Computer)**

Name of the Subject :

☛ **Advance Microprocessor Systems & Applications**

☛ Subject Code No. : 7 0 6 9 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

### SECTION - I

1 (a) Answer the following : **10**

(i) What is the physical address corresponding to DS : 103FH if DS = 90 D0H?

(ii) Each memory segment is _____ bytes long and address within a segment is referred to as _____ address.

(iii) Register_____ is the only register used as an I/O address pointer in IN and OUT instruction.

(iv) The 8086 can be single stepped if the _____ flag is set.

(v) Explain XLAT instruction with example.

(vi) Bring out the difference between DIV and IDIV instructions.

(vii) What is the difference between a near and a far memory location?

(viii) Identify the addressing mode of the following instruction:
MOV AH, TEMP [BP+SI]; TEMP defines a memory location.

(ix) Explain Even directive.

(x) Write about the following instruction :
MOV CS: [BX], DL

(b) Explain IVT in brief. **4**

(c) Explain instruction pipelining and its advantages. **4**

2 (a) Write a program that will accept a string from keyboard in lowercase, convert it in upper case and display result on screen. 8

**OR**

2 (a) Write a program to reverse the digits of a double word stored in memory. Store the result in memory. 8

(b) Explain various techniques of passing parameters to subroutines in 8086. Give the advantage and disadvantage of each. 8

3 (a) Why segmentation is required? What is the advantage of using a CPU register for temporary data storage over a memory location ? 6

(b) Explain the following 8086 instructions. 4
FPREM FRNDINT.

(c) Write an 8087 program to compute the area of a circle. 6

**OR**

(c) Explain complete process, when ESC instruction is encountered with respect to 8086 and 8087. 6

## SECTION - II

4 (a) Match the following features with the appropriate processor from the Intel family that was the first to support it : 10

| | | | |
|---|---|---|---|
| (i) | On chip common code and data cache | (a) | 8085 |
| (ii) | Integrated programmable interrupt controller | (b) | 8086 |
| (iii) | Built in Self Test (BIST) | (c) | 80186 |
| (iv) | Instruction Prefetch | (d) | 80286 |
| (v) | Interrupt | (e) | 80386 |
| (vi) | Speculative Execution | (f) | 80486 |
| (vii) | Coprocessor support | (g) | Pentium |
| (viii) | Virtual Memory support | (h) | Pentium Pro |
| (ix) | Integrated Programmable timers | | |
| (x) | Two Integer Pipelines U and V | | |

(b) Explain how conversion of a linear address to a physical address is performed in 80386 µP when paging mode is enabled. What is the maximum size of a segment in 80386 µP.

**OR**

(b) An IBM PC adapter board uses 10 × 15 dot matrix. For that find the following : **6**

(i) Total scan lines per frame including retrace

(ii) Horizontal Synchronize frequency

(iii) Character clock frequency.

Assuming that we require 80+20 characters per row and 25+2 rows per frame and vertical synchronize frequency is 50 Hz.

**5** (a) Draw and explain block diagram of 80286 µP. **8**
Mention how much physical and virtual memory space is accessible in 80286 µP.

**OR**

**5** (a) Draw the flowchart for programming sequence to be followed by software routines for printer interface. **8**

(b) Describe write Pre-Compensation and Data Separation using PLO for Floppy Disk. **8**

**6** (a) Design the memory decoding logic circuit and draw the required interfacing diagram to interface the following to 8086 : **10**

(i) 32 kB RAM - using 8 kB RAM ICs.

(ii) 64 kB ROM using 8 kB ROM ICs

Higher addresses are to be assigned to ROM and then RAM.

(b) Answer the following (any **two**) **8**

(i) Explain ISA and EISA buses in brief

(ii) What is meant by MMX?

(iii) Explain SCSI bus

(iv) Write a note on Call Gates.

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