Code: A-13 **Subject: COMPUTER ENGINEERING**
Time: 3 Hours **June 2006** **Max. Marks: 100**

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or best alternative in the following: (2x10)

a. The Pentium motherboards should have a cache memory for the maximum performance

(A) 256 K **(B)** 128 K
(C) 512 K **(D)** 1024 K

b. CACP stands for

(A) Central arbitration control point.
(B) Central availability common point.
(C) Central access control point.
(D) Central avoidance control point.

c. The instruction used to copy a specified word to top of stack is

(A) LOAD **(B)** PUSH
(C) POP **(D)** STORE

d. Dynamic cell circuitry uses

(A) Only one transistor per cell. **(B)** Two transistors per cell.
(C) Three transistors per cell. **(D)** Four transistors per cell.

e. The optical sensor used in a mouse is

(A) LED **(B)** LASER
(C) Photo detector **(D)** Resistor

f. The ROM-BIOS diskette services are called through the

(A) INT 21 H instructions. **(B)** INT 14 H instructions.
(C) INT 16 H instructions. **(D)** INT 18 H instructions.

g. A double-sided double layer DVD can offer the storage capacity of

(A) 17 GB. **(B)** 8.5 GB.
(C) 34 GB. **(D)** 4.3 GB.

h. Both the hard disks and floppy disks store on a sector

(A) 512 bytes. **(B)** 256 bytes.
(C) 128 bytes. **(D)** 768 bytes.

i. The RS-232 C interface is suitable for transferring data reliably upto a distance of

(A) 50 ft. **(B)** 5 ft.
(C) 100 ft. **(D)** 150 ft.

j. Highest priority interrupt in 8086 is

(A) TRAP. **(B)** Divide by zero.
(C) NMI. **(D)** INT 21.

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Distinguish between
(i) RISC and CISC Architectures.
(ii) Multiprogramming and Multitasking.
(iii) Pentium and 80486.
(iv) Windows and Linux. **(12)**

b. What is segment override prefix with reference to 8086? Explain with the help of an example. **(4)**

Q.3 a. Draw and explain the timing diagram for MVIA, 46 Instruction of Intel 8085. **(6)**

b. "A single instruction may use more than one addressing mode or some instruction may not require any addressing more". Explain the statement **(6)**

c. Explain the following 8086 instructions. (i)TEST (ii) SCAS W
(iii) LES (iv) XLAT. **(4)**

Q.4 a. Explain the concept of cache memory, associative memory and virtual memory. **(6)**

b. Draw a schematic hardware circuit for interfacing five 7 segment displays (common cathode) with 8086 using output ports. Write a program to display numbers 1 to 5 on them continuously. Assume that the 7-segment codes are stored in a look up table serially at the addresses 2000:0000H onwards starting from code for 1. **(10)**

Q.5 a. Explain the working principle of

(i) Optical mouse.
(ii) Flash memory.
(iii) LCD display.
(iv) RAID system.
(v) LASER printer. **(10)**

b. With reference to 8237 DMA controller, explain

(i) Single transfer mode.
(ii) Block transfer mode.
(iii) Demand transfer mode.
(iv) Cascade mode. **(1 ½ x 4 = 6)**

Q.6 a. Design a hardware circuit for interfacing 8251 USART with 8086 (or 8085). Set the 8251 in asynchronous mode as a transmitter and receiver with even parity enabled, 2 stop bits, 8 bit character length, frequency 160 kHz and baud rate 10 K.

(i) Write an Assembly Language Program to transmit 100 bytes of data that are stored at memory locations starting at 2000h.
(ii) Write an Assembly Language Program to receive 100 bytes of data and store them at memory locations starting at 3000h. **(10)**

b. Compare the features of all Intel processors starting from 8086 to Pentium. **(6)**

Q.7 a. Discuss the salient features of Power PC, MIPS, Cyrix, AMD and ultra SPARC processors. **(10)**

b. Write an 8086 assembly language program to convert a 4-digit decimal number to its binary equivalent using a procedure for dividing a number by two. **(6)**

Q.8 a. Design a memory system around 8088 that has a total of 16 K × 8 EPROM and 32 K × 8 RAM. Both EPROM and RAM chips are available in modules of 8K×8. The memory map is specified as below:

EPROM 1 : F0000 H – FIFFFH.
EPROM 2 : Decide suitably for a practical system.
RAM 1 : Contains interrupt vector table.
RAM 2 : 30000 H- 31FFF H
RAM 3 : 40000 H- 41FFF H
RAM 4 : 50000 H- 51FFF H **(10)**

b. What do you understand by (any two)

(i) Segmented memory.
(ii) SIMMs, DIMMs and RIMMs
(iii) Soft and hard sectored floppies. **(6)**

Q.9 Write explanatory notes on **(ANY FOUR)**

(i) Novell Netware
(ii) Flynn's classification of computers.
(iii) Dumb, intelligent and smart systems.
(iv) Comparison of ISA, EISA and PCI buses.
(v) 8279, programmable keyboard and display interface. **(4x4 =16)**