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

NOTE: There are 11 Questions in all.

Question 1 is compulsory and carries 16 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.
Answer any THREE Questions each from Part I and Part II. Each of these questions carries 14 marks.
Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or best alternative in the following: (2x8)

a. If a number 36 in a number system of radix r is given by  , the value of r is
(A) 3. **(B)** 4.
(C) 6. **(D)** 8.

b. Which of the following codes is self complementing
(A) Excess-3. **(B)** 8421.
(C) Gray. **(D)** Hexadecimal.

c. The term MIPS refer to

(A) Multiple Instructions Per Second.
(B) Most of the Instructions Per Second.
(C) Mega bytes Instructions Per Second.
(D) Million Instructions Per Second.

d. Which of the following is not a characteristic of RISC processors
(A) There are few instruction types and few addressing modes.
(B) Most of the instructions are executed in a single cycle.
(C) Most RISC instructions involve references to memory.
(D) Instead of micro-programming, hardwired controls are used.

e. The paging unit translates
(A) logical address to linear address.
(B) logical address to physical address.
(C) linear address to physical address.
(D) linear address to logical address.

f. CD-ROM is a
(A) optical ROM. **(B)** semiconductor ROM.
(C) metallic ROM. **(D)** electrical ROM.
g. 8085 CPU can transfer data serially using
(A) Ready pin. **(B)** Hold pin.

(C) Trap pin. **(D)** SOD pin.

h. Which of the following interface controller can work in both Master and Slave modes

(A) Timer / Counter - 8253.
(B) Programmable Interrupt controller - 8259.
(C) DMA controller - 8237.
(D) Programmable Peripheral Interface - 8255.

PART I

Answer any THREE Questions. Each question carries 14 marks.

Q.2 a. What are CISC processors? Write their salient features. **(6)**
b. Write down the differences between
(i) Control and data flow computers.
(ii) SISD and SIMD computer organisation. **(8)**

Q.3 a. Explain different types of Read Only Memories. **(6)**
b. Differentiate DIMMs from SIMMs. **(4)**

c. Draw the block diagram of Associative Memory. Explain its operation. **(4)**

Q.4 a. Explain with a neat diagram the internal architecture of a microprocessor which can address 1 MB of memory. **(8)**

b. What is the purpose of (in 8085):
(i)  and RESET OUT.
(ii) RIM and SIM instructions.
(iii) PCHL and SPHL. **(6)**

Q.5 a. Write the differences between 80486 and 80386. **(4)**
b. Explain briefly the various modes in which 80386 can operate. **(6)**

c. Write a short note on SPARC machines. **(4)**

Q.6 Answer the following w.r.t. 8085

(i) Which is the highest priority signal in 8085.
(ii) Give two ways to come out of halt state.
(iii) Give the function of NOP instruction.
(iv) How one byte call feature is implemented.
(v) What is the difference between Fetch and Read operation.
(vi) How wait states can be added in machine cycles of 8085.
(vii) Name the machine cycles that take place during LDA 8050 instruction. **(2 x 7 = 14)**

PART II

Answer any THREE Questions. Each question carries 14 marks.

Q.7 a. What is the difference between Memory mapped I/O and a peripheral I/O. **(5)**

b. List the advantages and disadvantages of segmented memory. **(5)**

c. Explain in brief, what do you understand by bit-mapped raster scan display. **(4)**

Q.8 a. Explain the operation of mode-1, input of 8255. **(4)**

b. How many bytes can be transferred by 8237. Explain the function of AEN and ADSTB. **(4)**

c. Write control word and instructions to set PC7 bit of 8255. **(2)**

d. What is the need of EOI command to 8259? How can two 8259s be cascaded? **(4)**

Q.9 a. Explain how a matrix keyboard can be interfaced to the CPU (8085)

(i) Using I/O port.

(ii) Using 8279. **(8)**

b. Explain the following:- (Any **TWO**)

(i) Mode 0 of 8253.

(ii) Block diagram of 8251.

(iii) ICW1, ISR, IMR of 8259. **(6)**

Q.10 a. Draw and explain the schematic to interface one EPROM and one SRAM to 8085. **(6)**

b. Explain the following signals of ISA bus

(i) T/C

(ii)

(iii) RESET DRV

(iv) BALE **(4)**

c. Write a brief note on LINUX OS. **(4)**

Q.11 a. Write an assembly language program (8085) for the following:-

(i) To find the number of 1s in a number stored in Register B.

(ii) To add two numbers and store the result in Decimal.

(iii)To toggle 5^{th} bit of register C.

(iv)To multiply a number in register D by 8 without using ADD instructions. **(8)**

b. Write a short note on optical scanner. **(3)**

c. Explain the following terms :

(i) Hit ratio.

(ii) Swapping.

(iii) Logical address. **(3)**

BACK