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No. of Printed Pages—4 **EC—603**

B. TECH.

SIXTH SEMESTER EXAMINATION, 2002-2003

MICROPROCESSORS

Time : 3 Hours *Total Marks : 100*

Note : (1) Attempt **ALL** the questions.

(2) All questions carry equal marks.

1. Attempt any FOUR parts of the following :— **(5×4=20)**

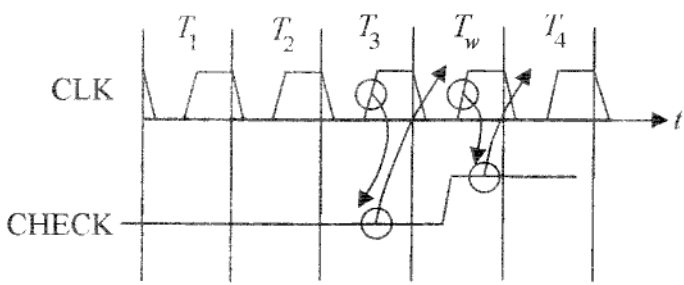
(*a*) Explain the concept of segmented memory. Explain the physical address formation in 8086.

(*b*) Describe the function of the 8086 queue. How does the queue speed up processing ?

(*c*) In 8086, mention the possible uses of all the internal registers.

(*d*) Draw the block diagram of 8086 architecture and explain the multiprocessing features available.

(*e*) Explain the meaning of the following timing diagram :—



(*f*) Write the pin details of a 256 KB EPROM and explain their function.

2. Attempt any FOUR part of the following :— **(5×4=20)**

(*a*) Write the addressing mode of the following 8086 instructions :—

(*i*) DEC WORD PTR [BX]

(*ii*) CALL FAR 4243 [BP] [SI]

(*iii*) XCHG 4243 [BP] [SI], SI

(*iv*) MOV AX, 4243

(*v*) JMP (BX)

(*b*) Show bit wise PSW of 8086 and explain the function of each flag with an example.

(*c*) Explain the function of the following 8086 instructions :—

(*i*) XLAT

(*ii*) WAIT

(*iii*) LOCK - prefix

(*iv*) INC BYTE PTR 4243 [BP] [SI]

(*v*) RET 12 D

(*d*) Explain with an example, the function of following assembler directive :—

(*i*) DT

(*ii*) ORIGIN

(*iii*) PUBLIC

(*iv*) GROUP

(*v*) EXTRN

(*e*) What is the parameter passing ?

Write a 8086 program to find out the number of even and odd numbers from a given series of 16-bit hexadecimal numbers.

(*f*) What is the recursive procedure ?
Write a 8086 program to move a string of data words from offset 2000 H to offset 3000 H, the length of the string is $2C3E_H$.

3. Attempt any TWO parts of the following :— **(10×2=20)**

(*a*) Draw the block schematic of READY portion of 8284 - A and explain the two modes of READY synchronization in terms of 8086 data set-up and data hold time.

(*b*) Draw the bus cycle for the following 8086 instruction :—

OUT [DX], AX

(*c*) In 8086 max. mode co-processor configuration, explain the function of the following :—

(*i*) $\overline{TEST}$

(*ii*) S6

(*iii*) $\overline{RQ}$ / $\overline{GT1}$

(*iv*) Bidirectional $\overline{BHE}$ in 8087

(*v*) ESC code

4. Attempt any TWO parts of the following :— **(10×2=20)**

(*a*) Show in time scale, the relation between different handshakes in conditional programmed output and suggest a circuit to generate them.

(*b*) What do you mean by the Cascade operation of 8237 ? Why is it required ?

(*c*) It is required to connect 68 input devices to 8086 in interrupting mode.

Suggest a scheme with complete connection with emphasis towards working principle.

5. Attempt any TWO parts of the following :— (10×2=20)

(*a*) It is required to interface the following with 8086 in max. mode :—

(*i*) 6264 × 2 (MONITOR)

(*ii*) 27256 × 2 (MONITOR)

(*iii*) 62128 × 4 (USER)

(*iv*) 2732 × 2 (USER)

Draw the memory map and generate the chip selects.

(*b*) In reference to 80386, explain the following :—

(*i*) Conforming code segment

(*ii*) CALL gate

(*iii*) Granularity bit

(*iv*) GS and FS

(*v*) Shadow registers

(*vi*) LTD and IDT

(*vii*) Physical and Virtual memory

(*viii*) aliasing and overlapping

(*ix*) page replacement policy

(*x*) GDTR and LDTR

(*c*) What is dedicated microcontroller ? Enlist the salient features of 8051 family of microcontrollers.