



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
FIRST SESSIONAL

SUBJECT NAME: Advanced Microprocessor Architecture (IT506)

Examination	: B.TECH - Semester - V	Seat No.	:
Date	: 03/08/2016	Day	: Wednesday
Time	: 11:30 to 12:45	Max. Marks	: 36

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. No marks without justification in T/F questions.
5. Draw neat sketches wherever necessary.
6. Calculator is not allowed.

- Q.1 Do as directed.**
- (a) **MOVE AX,[1234H]** 02
For above instruction, offset will be added to which segment register? Modify the instruction if offset is to be added to CS register.
- (b) After reset, CS and IP will have values _____ and _____ respectively in 8086. 02
- (c) How many segments are active at a time in 8086? State the names. 02
- (d) Two different logical addresses can point to the same physical address in 8086. State, in which condition this is possible. 02
- (e) Why interrupt subroutine cannot be interrupted by maskable interrupt INTR? 02
- (f) Indirect FAR jump instruction will always use one of the memory addressing mode to get new address. State true/false and justify 02
- Q.2 Answer any two**
- (a) The 8086 system requires following memory map : 06
EPROM - First 16 Kbytes of 1 Mbytes address space
RAM - Last 16 Kbytes of 1 Mbytes address space
EPROM and RAM devices available are of size 8 Kbytes. Use 3625 bipolar PROM as decoder to map above devices using absolute decoding. Write down the truth table and draw the complete circuit diagram. State your assumptions, if any, very clearly.
- (b) The 8086 system requires following memory map : 06
RAM - Last 32 Kbytes of 1 Mbytes address space
RAM device available is of size 8 Kbytes. Use 3625 bipolar PROM as decoder to map above devices using absolute decoding. Connect A0 and *BHE as input to the decoder. Write down the truth table and draw the complete circuit diagram. State your assumptions, if any, very clearly.
- (c) Write an assembly program for assembler to find number of times letter 'R' exist in the string 'MICROPROCESSOR'. Store the count at memory Location COUNT in Data segment. Draw neat flow chart and state your assumptions very clearly. 06
- Q.3**
- (a) IRET instruction modifies 01
(i)CS only (ii)IP only (iii)CS and IP (iv)CS, IP and flag register
- (b) The BP register is typically used for accessing 01
(i)extra segment (ii)code segment (iii)stack segment (iv) data segment
- (c) Which of the following is an illegal 8086 instruction and why? 01
(i)MOV ax,[bx] (b)INC [bx] (c)ADD bx,[bx] (d)ADD [si],[bx]
- (d) Calculate the displacement for jump. 03
MOV CX,5 ; size 3 bytes
NEXT: ADD AX,BX ; size 2 bytes
NOP ; size 1 byte
NOP ; size 1 byte
NOP ; size 1 byte
JMP NEXT ; size 2 bytes
- (e) MOV AX,201H 06
MOV BL,02H
DIV BL
If INTR interrupt is already enabled and arrives at the beginning of the DIV instruction. Describe the response of 8086 after the execution of DIV BL instruction for the following conditions :
Type 0 isr takes 70 microsec and INTR pulse width is 140 microsec. INTR isr takes 40 Microsec.
- OR**
- Q.3**
- (a) Variable TEMP is defined as TEMP DB 34H, 12H. Write an instruction to move a word from variable TEMP into AX register such that assembler should not give any error. 02
Address 00080H in IVT contains 4A24H and address 00082H contains 0040H. To what interrupt type do these locations correspond? What is starting physical address for the interrupt service procedure? 02
- (b) State two main advantages of memory segmentation in 8086 system. 02
- (c) If DS=1000H, SS=1000H, SI=0000, DI=0000, BP=0000, BX=003DH, SP=0040H, CS=3000H 06
MOV AX,1234H
MOV WORD PTR[003DH],AX
MOV WORD PTR[0000],AX
MOV AX,5678H
PUSH AX
MOV AX,[003DH]
MOV CX,[BX]
MOV BP,SP
MOV DX,[BP+0000]
Specify the memory addressing modes for MOV AX,[003DH], MOV CX,[BX] and MOV DX,[BP+0000] instructions. Also specify the content of AX, CX and DX registers after the execution of above program.