



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER V [INFORMATION TECHNOLOGY]
SUBJECT: ADVANCE MICROPROCESSOR ARCHITECTURE (IT506)

Examination : Second Sessional **Seat No. : _____**
Date : 06/09/2017 **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. Draw neat sketches wherever necessary.
5. Calculator is not allowed.

Q.1 Do as directed.

- (a) If you load the selector of a code segment which is 'marked' as 'executable only' into DS segment register, there will be an exception. State true/false and Justify. [2]
- (b) The access rights byte of a segment descriptor contains FEh. What type of segment descriptor does it describe, and what are its characteristics? [2]
- (c) Three Parameters A,B,C are passed in parentheses to near function in 'C'. Draw the stack frame. [2]
- (d) When a selector is loaded in a segment register, it will point to a _____ in _____ or _____ to define _____ in protected mode of 80386. [2]
- (e) Assuming DPL=2, CPL=0 and RPL=2 will the data access take place? [2]
- (f) If IDTR= 1000000000FFh then state the range of interrupt types supported by the system. Show the calculation. If you want to accommodate all the interrupt types, modify the content of the IDTR. [2]

Q.2 Attempt Any Two from the following questions. [12]

- (a) Describe the following descriptor in detail. Selector of this descriptor must be loaded into which register of 80386 in PM and why? If value is '9B' instead of '99', can it be loaded any segment register? Which are all the checks 80386 will do and will there be exception(s) due to this checks? [6]

0040h		6
99h	80h	4
0000h		2
0020h		0

- (b) MOV AX,DATA
MOV DS,AX
:
:
MOV [00012345],EAX [6]

During initialization of DS segment register in the above program, what are all the checks 80386 will do?

0040h		6
F1h	80h	4
0000h		2
FFFF		0

While executing the instruction MOV [00012345],EAX, list all the checks 80386 will do. Will there be any exception? If yes, rectify the mistake in the instruction.

- (c) LDTR is loaded with LDT selector 000Ch. Will there be any exception? Justify your answer. If yes, modify the content of LDTR to avoid exception. If GDTR contains 00008000003Fh, will there be any exception? Justify your answer. If yes, modify the content of GDTR to avoid exception. The 5th byte of LDT descriptor pointed by LDT selector contains 82h. Will there be any exception? Justify your answer. If yes, modify the content of 5th byte of the LDT descriptor to avoid exception. [6]
- Q.3**
- (a) Explain how IOs are protected in protected mode of 80386. Also specify the mechanism which allows ports to be associated only with specific tasks. [2]
 - (b) Specify the major hardware features provided in Pentium processor on chip? [2]
 - (c) What is the mechanism available to run 8086 type program in Protected mode of 80386? Explain in brief. [2]
 - (d) What is interrupt hook? Explain with example. [2]
 - (e) Explain how 32-bit linear address generated by segment unit will be further translated in to physical address by paging unit in 80386. [4]
- OR**
- Q.3**
- (a) What is the lifetime and scope of “Automatic” variable in ‘C’? Explain which memory segment allocated for them in the system and how this will help to achieve above characteristics. [2]
 - (b) Which memory model effectively nullifies the segmentation in 80386? How it can be achieved? [2]
 - (c) If selector 210Ch is loaded in TR register which is pointing to a TSS descriptor. Will there be any exception? Justify your answer. [2]
 - (d) If GDTR=001000000FFF, what is the beginning address of the Global Descriptor Table, size of the table in bytes and ending address of the table? How many descriptors can be stored in the GDT? [2]
 - (e) In multiuser / multitasking system, OS should be protected from user program and user program should be isolated from each other and they should be protected from each other. Explain in detail the support provided by 80386 in PM to implement the above requirements. [4]