**Assignment-4**

1. a) Convert the decimal number 2435.5625 to long-real format. Show the calculation.

b) Write an 8087 program that computes the volume of a Torus which is given by the formula V=(1/4)π2(r1+r2)(r1-r2)2

1. a) “80287 which is the math coprocessor of 80286, wants 80286 to perform a data transfer”. Explain the communications that happen between 80287 and 80286 during a data transfer with respect to pins PEREQ, PEACK’, BUSY’, ERROR’. Differentiate fault from a trap.

b) Convert the decimal number 2435.5625 to temporary-real format. Show the calculation.

3 a) Explain how 80286 is switched from real address mode to protected mode and vice versa

b) In protected mode, an 80386 address comprises 16-bit segment selector and 32-bit offset. Having this, explain how 80386 compute the physical memory address with a rough sketch. List 2 differences between LDT and GDT

4 a) “In 8086 address bus is multiplexed with data bus”. What is multiplexing? What in 80286 and 80386? What is address pipelining in 80386? What it has got to do with ADS# and NA# signals?

b) In paging mode of 80386, a system is set up with one page directory. What should be the values of A22-A31, A12-A22 so that 80386 selects the 901th page frame in 347th page table in the page directory? Show that the maximum memory for a page directory having base addresses of 1024 page tables is 4GB.

5 a) In a multiuser operating system there can be n tasks viz., Task 1,2,..,n. Let’s say Task 1 is currently executing and at the end of its time slice, task switching happens i.e., say to Task 2. Similarly, at the end of time slice of Task 2, task switching happens. In either case, the context of the respective task should be saved for use in near future. Explain how this is done in 80386 protected mode and one of the task switching ways.

b) How useful is 80386 virtual 8086 mode? Explain.

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