

in detail how Direct Memory Access system works by
suitable example showing the various stages.

Two examples of problems that could occur if a computer
allowed user programs to access I/O devices directly, rather than
requiring them to go through the operating system.

(b) Use IEEE single-precision floating point numbers to compute the
following quantities :

$$13.25 + 4.5$$

$$0.125 * 8$$

- Q 9 (a) Explain why poor load balancing leads to less than linear speedup.
(b) How many bits of storage are required for the tag array of 32-KB
cache with 256-byte cache lines and four-way-set-associativity if
the cache is write-back but does not require any additional bits of
data in the tag array to implement the write-back policy? Assume
that the system containing the cache uses 32-bit addresses.

May 2005

Section - A (Marks : 2 each)

- Q. 1 (a) Convert the following logic function into minterm
 $A'BC'D'E'F + A'BC'DEF' +$
 $AB'C'DEF' + AB'C'DEF' - ABC'DE'F'$
(b) Define the terms I/O processor and I/O controller.
(c) Give the layered view of a computer system.
(d) What is the role of Binary Counters in digital computers ?
(e) Perform the subtraction with the following unsigned binary
number by taking the 2's complement of the subtrahend
11010-11111.
(f) Explain the meaning of the memory-reference instruction BUN.
(g) What is the difference between micro code and micro instruction ?
(h) Give two examples of program control instructions.
(i) How Virtual Memory is useful in memory hierarchy ?
(j) What do you mean by programmed I/O Concept ?

Section - B (Marks : 5 each)

- Q. 2 What is the significance of LINPACK benchmark specifications ?
Q. 3 Give an overview of 8255 programmable ports.
Q. 4 A computer uses RAM chips of 1024 x 1 capacity. How many
chips are needed, and how should their address lines be connected
to provide a memory capacity of 1024 bytes ? Also explain in
words how the chips are to be connected to the address bus ?
Q. 5 How many characters per second can be transmitted over a
1200-baud line in each of the following modes considering a
character code of 8 bits :
(a) Synchronous serial transmission.
(b) Asynchronous serial transmission with 2 stop bit.
Q. 6 Discuss Booth Multiplication algorithm with the help of suitable
example.