

B.Sc. (Honours) Semester-II Examination 2017
Computer Science
Course : BCSC-22
(Computer Organization)

Time : 3 Hours

Full Marks : 40

Questions are of value as indicated in the margin

Attempt Question No. **1** and **any four** from the rest

1. Answer **any eight** from the following : 1×8=8
 - i. How many address lines are required to address one TB of memory?
 - ii. Name one bidirectional system bus.
 - iii. What is PROM?
 - iv. A Digital Camera is an output device or an Input Device?
 - v. If A =9H, B = AH what are the contents of A and B after the execution of the statement MOV A, B?
 - vi. What do you mean by volatile memory?
 - vii. Out of magnetic memory and semiconductor memory which one is faster?
 - viii. State two differences between Hardware and Software.
 - ix. How many fields are there in an IP address?
2. a) Compare and contrast the primary memory and secondary memory of a system. Give examples.
b) What do you mean by memory hierarchy? What are the characteristics of a memory hierarchy system?
c) Arrange following memories in memory hierarchy : RAM, CDROM, 64TB HDD, 1GB Cache, PC(Program counter). (2+1)+(2+1)+2=8
3. i. State the property of locality of reference.
ii. Explain with the help of property of locality of reference how the presence of cache improves the overall performance of Processor.
iii. How the performance of cache memory is measured? For a certain process there are 1500 memory access (in a certain interval of time) out of which 200 is miss calculate the hit ratio. 2+3+(2+1)=8
4. (a) What is virtual memory? Explain.
(b) What do you mean by virtual address and logical address? A computer has 4K main memory and 8K auxiliary memory then how much is the width of virtual address and physical address? What is the function of memory management Unit(MMU)?
(c) In the context of the above example explain with the help of memory page table how the virtual address of the above system will be converted to physical address. 1+(1+1)+4=8
5. i. Compare and contrast Programmed I/O, Interrupt driven I/O and DMA transfer.
ii. What is the function of the DMA Controller? When does DMA transfer take place? Give an example.
iii. Explain what do you mean by cycle stealing DMA. 4+2+2=8

P.T.O.

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6. (a) “Intel 8085 is a 8 bit microprocessor” – what do you mean by the statement? What is width of the PC for such processor? What are the various flags of the Intel 8085 processor?
- (b) What are the addressing modes supported by Intel 8085 processor? Explain two of them with Examples. $(2+0.5+1)+(0.5+4)=8$
7. i) What do you mean by page faults? When do page faults occur? What are the necessary actions taken by the OS during page fault situation?
- ii) What is page replacement algorithm? For a system in a certain interval the page address stream formed by the executing program is as follows: $(1+1+1)+(0.5+4.5)=8$
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- Calculate the hit ratio for OPT, FIFO and LRU algorithms.
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