

Total No of Questions: [12]		SEAT NO. : <div></div>	
[Total No. of Pages : 3]			
S.E. 2008 (Information Technology)			
Computer Organization(214442)			
(Semester - I)			
Time: 3 Hours		Max. Marks : 100	
Instructions to the candidates: 1) Answers to the two sections should be written in separate answer books. 2) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q. 12 from section II. 3) Neat diagrams must be drawn wherever necessary. 4) Figures to the right side indicate full marks. 5) Use of Calculator is allowed. 6) Assume Suitable data if necessary			
SECTION I			
Q1)	a)	Compare restoring and non-restoring division algorithm. Divide the following numbers using non-restoring algorithm and justify your answer. Dividend = (24) ₁₀ , Divisor = (7) ₁₀	[10]
	b)	Draw IEEE standard single precision and double precision floating point formats. Represent (99.75) ₁₀ in single precision and double precision IEEE format.	[8]
		OR	
Q2)	a)	Draw flowchart of Booth's algorithm for signed multiplication. How does bit pair recoding technique achieve faster multiplication? Bit pair recode multipliers: (110110101111001) ₂ and (0101101010010101) ₂	[10]
	b)	Draw Von Neumann Architecture and explain function of registers in it.	[8]
Q3)	a)	State addressing modes for the following instructions and show physical address generation: (i)MOV [BP], AX (ii)MOV AX, [2000H] (iii)MOV CX, [BX][SI] (iv)MOV AX, [BX][SI+0020H]	[8]
	b)	Draw and explain programmer's model of 8086.	[8]
		OR	
Q4)	a)	Specify factors which decide instruction length. Draw and explain instruction format for INTEL processors.	[8]
	b)	Draw timing diagram for memory read cycle of 8086 and list operations in each T state.	[8]

Q5)	a)	Explain the control sequence needed to perform processor functions: (i) Fetching a word from memory (ii) Performing an arithmetic or logical operation.	[8]
	b)	Draw the diagram of microprogrammed control unit and give its advantages and disadvantages.	[8]
		OR	
Q6)	a)	Draw and explain single bus organization of the CPU, showing all the registers and data paths.	[8]
	b)	Explain the design of multiplier control unit using Delay Element Method.	[8]
		SECTION II	
Q7)	a)	What is MESI protocol? Explain the meaning of each of the four states of the MESI protocol.	[8]
	b)	Discuss direct mapping and set associative cache mapping techniques with respect to mapping function, address structure, merits and demerits.	[10]
		OR	
Q8)	a)	Write short note on (any 2) (i) RAID (ii) DVD (iii) SDRAM (iv) EEPROM	[8]
	b)	State the page replacement strategies and explain any three in detail with example.	[10]
Q9)	a)	Compare: (i) Memory Mapped I/O and I/O Mapped I/O (ii) Programmed I/O and Interrupt driven I/O	[8]
	b)	State features of 8251 and explain difference between synchronous and asynchronous serial communication.	[8]
		OR	
Q10)	a)	What is DMA? Explain demand transfer mode and block transfer mode of DMA data transfer.	[8]
	b)	Write short note on (any 2): (i) PCI (ii) SCSI (iii) USB ports	[8]
Q11)	a)	Compare closely coupled and loosely coupled multiprocessor configurations. Explain loosely coupled multiprocessor configuration.	[10]

	b)	What is cluster? State advantages of clustering.	[6]
		OR	
Q12)	a)	Write short notes on (any 4) (i)Superscalar architecture (ii)UMA (iii)NUMA (iv)RISC (v)CISC (vi)Instruction pipelining	[16]