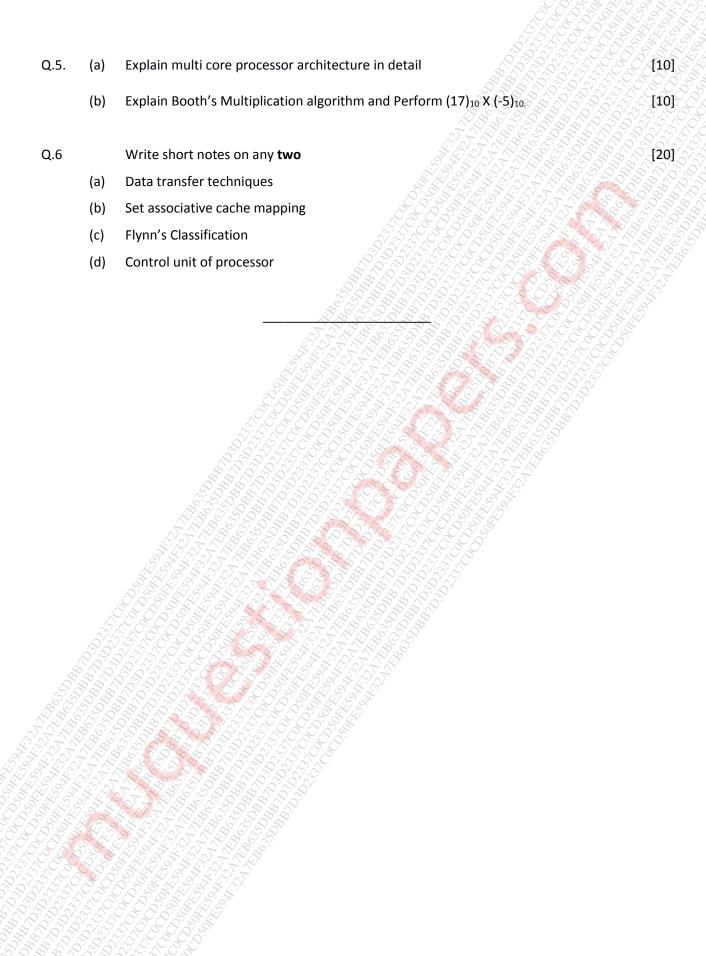
(3 Hours)

[Total Marks: 80]

				83. 45. 45. 45. 45. 45. 45. 45. 45. 45. 45
NB: 1.	Questi	on No.	.1 Compulsory.	322
2.	. Solve a	any TH	REE from Q.2 to Q.6	
3.	. Assum	ne suita	able data whenever necessary with justification.	3,22
	Q.1		Answer any four questions	A A
		(a)	Describe the memory hierarchy in the computer system	[05]
		(b)	Give different instruction formats.	[05]
		(c)	Explain principle of locality of reference in detail	[05]
		(d)	Differentiate between Memory Mapped IO and IO Mapped IO.	[05]
		(e)	Explain Superscalar Architecture.	[05]
	Q.2	(a)	A program having 10 instructions (without Branch and Call instructions) is executed	[10]
			on non-pipeline and pipeline processors. All instructions are of same length and	
			having 4 pipeline stages and time required to each stage is 1nsec.	
			i. Calculate time required to execute the program on Non-pipeline and	
			Pipeline processor.	
			ii. Calculate Speedup.	
		(b)	With a neat diagram, explain branch prediction in detail.	[10]
		250		
	Q.3.	(a)	Explain page address translation with respect to virtual memory and further explain	[10]
			TLB in detail.	
3		(b)	What is "Microprogram"? Write microprogram for following operations.	[10]
			i. ADD R1, M, Register R1 and Memory location M are added and result store	
			at Register R1.	
		3 9 H	ii. MUL R1, R2 Register R1 and Register R2 are multiplied and result store at	
			Register R1.	
	Q.4	(a)	Explain Bus Contention and different method to resolve it.	[10]
888		(b)	Define instruction pipelining and its various hazards in detail.	[10]
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