Printed Page:-03 Subject Code:- ACSBS0303 Roll. No: NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA (An Autonomous Institute Affiliated to AKTU, Lucknow) **B.Tech** SEM: III - THEORY EXAMINATION (2024 - 2025) Subject: Computer Organization & Architecture Time: 3 Hours Max. Marks: 100 **General Instructions:** IMP: Verify that you have received the question paper with the correct course, code, branch etc. 1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice *Questions (MCQ's) & Subjective type questions.* 2. Maximum marks for each question are indicated on right -hand side of each question. 3. Illustrate your answers with neat sketches wherever necessary. 4. Assume suitable data if necessary. 5. Preferably, write the answers in sequential order. 6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked. -2026 20 **SECTION-A** 1. Attempt all parts:-Brain of computer is _____. (CO1,K1) 1-a. 1 Control unit (a) (b) Arithmetic and Logic unit (c) **Central Processing Unit** Memory (d) One nibble is equivalent to how many bits? (CO1,K1) 1-b. 1 2 (a) 4 (b) 8 (c) (d) 1 1 1-c. IEEE stands for _____. (CO2,K1) Instantaneous Election Electrical Engineering (a) (b) Institute of Emerging Electrical Engineers (c) Institute of Emerging Electronic Engineers (d) Institute of Electrical and electronics engineers Carry lookahead logic uses the concepts of _____. (CO2,K2) 1-d. 1 (a) Inverting the inputs (b) Complementing the outputs (c) Generating and propagating carries

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	(d)	Ripple factor	
1-e.	W	Which of the following is fastest memory? (CO3,K1)	1
	(a)	Secondary memory	
	(b)	Auxiliary memory	
	(c)	Cache memory	
	(d)	Virtual memory	
1-f.	Т	he circuit used to store one bit of data is known as (CO3,K2)	1
	(a)	Register	
	(b)	Flip Flop	
	(c)	Counter	
	(d)	None	
1-g.	Ir	Daisy Chaining Priority, the device with the highest priority is placed at the (CO4,K1)	1
	(a)	Last Position	
	(b)	Can be placed anywhere	
	(c)	First Position	
	(d)	Depend on device	
1-h.	The technique whereby the DMA controller steals the access cycles of the processor to operate is called (CO4,K2)		
	(a)	Memory stealing	
	(b)	Memory Con	
	(c)	Cycle stealing	
	(d)	Fast conning	
1-i.	E ((ach stage in pipelining should be completed within cycle. CO5,K1)	1
	(a)	1	
	(b)	2	
	(c)	3	
	(d)	4	
1-j.	T 	o increase the speed of memory access in pipelining, we make use of (CO5,K2)	1
	(a)	Special memory locations	
	(b)	Special purpose registers	
	(c)	Cache	
	(d)	Buffers	
2. Att	empt a	all parts:-	
2.a.	D	Define RAM. (CO1,K2)	2
2.b.	L	ist all the features of ALU. (CO2,K1)	2

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2.c.	Explain the purpose of memory hierarchy in digital computers. (CO3,K2)	2
2.d.	What is interrupt? (CO4,K2)	2
2.e.	What is the advantage of parallel processors? (CO5,K1)	2
<u>SECTIO</u>	<u>N-B</u>	30
3. Answe	r any <u>five</u> of the following:-	
3-a.	What is Bus? Draw the single bus structure. (CO1,K1)	6
3-b.	Discuss the basic functional units of a computer. (CO1,K2)	6
3-c.	Calculate 2 X -3 with the help of Booth algorithm algorithm. (CO2,K3)	6
3-d.	Explain Carry Look Ahead adder with help of diagram. (CO2,K2)	6
3.e.	Differentiate between static RAM and dynamic RAM. (CO3,K2)	6
3.f.	What is DMA? Explain DMA transfer in a computer system with the help of diagram. (CO4,K2)	6
3.g.	Design and explain the concept of Pipelining with the help of suitable example. (CO5,K3)	6
<u>SECTIO</u>	<u>N-C</u>	50
4. Answe	r any <u>one</u> of the following:-	
4-a.	What is register? Illustrate the transfer process from register R1 to R2 when the control signal P is equal to 1. (CO1,K4)	10
4-b.	What is addressing mode? Classify the various addressing techniques with help of examples. (CO1,K2)	10
5. Answe	r any <u>one</u> of the following:-	
5-a.	Describe ripple carry adder with the help of diagram. (CO2,K2)	10
5-b.	When $R1=101010 \& R2 = 010101$. Calculate the following -1. shr $R1$ 2. shr $R2$ 3. ashr $R1$ 4. ashr $R2$ 5. shl $R1$ (CO2,K3)	10
6. Answe	r any <u>one</u> of the following:-	
6-a.	Differentiate between hardwired and micro-programmed control unit. (CO3,K3)	10
6-b.	What is cache memory? Explain various mapping techniques available in cache memory. (CO3,K2)	10
7. Answe	r any <u>one</u> of the following:-	
7-a.	What is I/O peripheral devices? Draw and explain Interrupt Initiated I/O process. (CO4,K3)	10
7-b.	What is ISR? Explain the action carried out by the processor after occurrence of an interrupt. (CO4,K2)	10
8. Answe	r any <u>one</u> of the following:-	
8-a.	What is Parallel Processing? Explain with help of diagram. (CO5,K2)	10
8-b.	Explain various pipelining conflicts. Write short notes on throughput and speedup. (CO5,K2)	10

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