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Code No. : 14624

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD

B.E. (I.T. : CBCS) IV-Semester Main Examinations, January-2021

Computer Organization

Time: 2 hours

Max. Marks: 60

Note: Answer any NINE questions from Part-A and any THREE from Part-B

Part-A (9 × 2 = 18 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Define the functionalities of indirect addressing mode and relative addressing mode with an example.	2	1	1	1
2.	List the difference between DRAM & SRAM	2	1	1	1
3.	Represent the decimal number 299 in Big Endian and Little Endian format.	2	2	2	2
4.	Give micro operation for i) shift right register ii) circular shift register.	2	2	2	1
5.	Differentiate between a subroutine and Interrupt service routine	2	1	3	1
6.	What is meant by Cycle stealing?	2	1	3	1
7.	Using a faster processor chip results in a corresponding increase in performance of a computer even if the main memory speed remains the same. Justify the above statement with a True or False.	2	3	4	2
8.	List four difference between PROM and EPROM.	2	2	4	1
9.	List the advantages and disadvantages of Pipeline system.	2	2	5	1
10.	Represent the state machine diagram of a 4-state branch prediction algorithm.	2	1	5	1
11.	What are the basic functional units of a computer?	2	1	1	1
12.	What is a control word? Give an example.	2	1	2	1
Part-B (3 × 14 = 42 Marks)					
13. a)	What is an addressing Mode? With an example explain the different addressing modes.	8	2	1	1
b)	Evaluate the instruction $(x + y) - (p - q)$ using one, two, three address instruction formats.	6	2	1	1
14. a)	A = 0101 and B = 1100 Perform i) selective set ii) selective complement iii) selective mask and iv) selective clear operations	8	3	2	2
b)	Write a short note on any two arithmetic and shift operations with an example.	6	3	2	2

15. a)	How many characters/sec can be transmitted over a 1500 baud line in each of the following mode? a) Synchronous serial transmission b) asynchronous serial transmission with 02 stop bits c) asynchronous serial transmission with 01 stop bit.	6	3	3	2
b)	Explain DMA in detail.	8	1	3	1
16. a)	A block -set associative cache consists of a total of 32 blocks divided into 8-block sets. The main memory contains 2048 blocks, each consisting of 64 words. i) How many bits are there in a main memory address? ii) How many bits are there in each of the TAG, SET and WORD fields?	8	3	4	2
b)	Differentiate between direct mapping and set associative mapping.	6	1	4	1
17. a)	What are the various types of hazards in pipelining? Discuss Control Hazard with an example.	8	1	5	1
b)	What are the advantages of super scalar processor?	6	4	5	3
18. a)	Differentiate between Multiprocessors and Multicomputers.	6	2	1	2
b)	Let the codes for addition 00101, logical AND 01000 and Shift right is 10000. The binary codes for R1 -000, R2 -001 and so on. Find out the micro operations for the following instructions. i) $R1 \leftarrow (R2 + R3)$ ii) $R3 \leftarrow shr R3$	8	3	2	3
19.	Answer any Two of the following.				
a)	Explain the sequence of events that happen in the timing of an input data transfer using the handshake scheme.	7	2	3	2
b)	Explain the various types of memory in memory hierarchy. Compare them in terms of size and speed.	7	3	4	2
c)	Consider a pipeline with 05 functional units which have clock cycles 10,8,5,6,5 n secs. If the pipeline overhead is 2 n secs find out the speed up time.	7	3	5	2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60
2	Knowledge on application and analysis (Level-3 & 4)	40
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	0
