H.T.No.

Code No: CT3518   SRGEC-R20

II B.Tech II Semester Regular Examinations, July 2022
COMPUTER ORGANIZATION

(Computer Science and Engineering, Artificial Intelligence and Data Science, Information Technology)

Time: 3 Hours   **Max. Marks: 70**

Note: Answer one question from each unit.
All questions carry equal marks.

5 × 14 = 70M

UNIT-I

1. a) Describe basic computer registers and draw block diagram of register, basic computer registers and memory. (7M)

   b) List different types of shift microoperations. Explain each one functionality with an example. (7M)

(OR)

2. a) Design a bus system for connecting 4 registers each of size 8 bits. (7M)

   b) Design a 4-bit Adder/Subtractor circuit. (7M)

UNIT-II

3. a) Obtain Effective Address and content of AC for all the addressing modes with the following data. (6M)

	Address	Memory	
PC = 400	400	Load to AC	Mode
	401	Address = 700	
R1 = 800	402	Next Instruction	
XR = 500			
	700	805	
AC			
	799	540	
	800	425	
	805	611	
	1102	500	
	1200	600	

   b) Illustrate decoding of microoperation fields in instruction format. (8M)

(OR)

4. a) Write the machine code for the expression X=(A+B)*(C-D) using different instruction formats. (8M)

   b) Explain the process of mapping with an example. (6M)

UNIT-III

5. a) Describe auxiliary memory in the computer system. (6M)

   b) What is cache coherence? Specify Conditions for Incoherence. (8M)

(OR)

6. a) Derive the match logic in associative memory. (7M)

   b) What is Cache Memory? Illustrate direct mapping technique of Cache memory. (7M)

UNIT-IV

7. a) With the help of a neat diagram explain how the priority of a device is decoded parallelly for servicing the interrupts. (7M)

   b) Explain block diagram of Input-Output Processor. (7M)

(OR)

8. a) Discuss the design of a typical input or output interface. (6M)

   b) Explain the strobe control method of asynchronous data transfer. (8M)

UNIT-V

9. a) Apply Division operation on Signed Magnitude representation of data -29 and +6. (7M)

   b) Explain in detail about three segment instruction pipeline. (7M)

(OR)

10 a) Perform multiplication of -8 X -9 using Booths algorithm. (7M)

   b) Draw flowchart for Division operation on Signed Magnitude representation of data. (7M)

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