Darshan Institute of Engineering and Technology

Bachelor of Technology – Semester VI

Mid Semester Examination: I – January 2024

Course Code	: 2101CS602	**Exam Date**	: 16/01/2024
Course Name	: Computer System Architecture	**Total Marks**	: 30
Time	: 08:15 am to 09:30 am	**Enrollment No.**	:_____

Instructions

1. Attempt **all** the questions.
2. Figure to the right indicate maximum **marks**.
3. Don't do any kind of **rough** work or **calculation** in Question Paper.
4. **Make** suitable assumptions whenever necessary.
5. The text to the right-side of the marks indicates the Bloom's Level **(BL*)** of the question followed by the Course Outcome**(CO).**
   i.e. R: Remembrance, **U:** Understanding, **A:** Application, **N:** Analyze, **E:** Evaluate, **C:** Create.

Course Outcomes (COs)	At the end of this course, students will be able to: CO 1: discuss common bus interface and micro-operations performed by processor. CO 2: carry out instruction formats, timing and control to design ALU. CO 3: explore the internal architecture of CPU with stack organization. CO 4: estimate execution timing with the help of pipeline and algorithm. CO 5: illustrate peripheral operations, DMA operations and IOP communication.

Q. No.		Question	Marks	BL*	CO
Q. 1	**(A)**	Write a short note on shift micro operation.	**3**	**R**	**CO1**
Q. 1	**(B)**	Implement a common bus system for 4 register and each register having a 3 bit using multiplexer.	**7**	**A**	**CO1**
		OR			
	(B)	Design a 4-bit arithmetic circuit.	**7**	**A**	**CO1**
Q. 2	**(A)**	Write a note on selective set and selective clear micro-operation.	**3**	**R**	**CO1**
Q. 2	**(B)**	Implement a common bus system for basic computer system.	**7**	**A**	**CO2**
		OR			
	(B)	Implement a Subtract instruction (memory reference instruction) in place of ISZ instruction. (Only use instruction that has hardware implementation means AC=M[AR]-AC)	**7**	**A**	**CO2**
Q. 3	**(A)**	Write a note on PC, AR and IR register.	**3**	**R**	**CO2**
Q. 3	**(B)**	Draw an instruction cycle flowchart.	**3**	**R**	**CO2**
		OR			

	(B)	Write a note on INPR and OUTR register.	**3**	**R**	**CO2**
Q. 3	**(C)**	Explain interrupt cycle in detail.	**4**	**U**	**CO2**
		OR			
	(C)	Explain register reference instructions.	**4**	**U**	**CO2**

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