Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Third Semester

Computer Science and Engineering

CS3351- Digital Principles and Computer Organization

(Common to Information Technology & Artificial Intelligence and Data Science)

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BTL*	*CO*	*Marks*
1.	Outline the logic circuit of half subtractor.	L2	1	2
2.	Compare the function of decoder and encoder.	L4	1	2
3.	Differentiate Synchronous and Asynchronous Counter.	L2	2	2
4.	Define State Table.	L1	2	2
5.	Define instruction set architecture.	L1	3	2
6.	List the relative addressing mode with an example.	L1	3	2
7.	Differentiate Static and Dynamic branch prediction.	L2	4	2
8.	Outline the concept of a data hazard.	L2	4	2
9.	Define memory management.	L1	5	2
10.	Classify the three types of the DMA transfer techniques.	L1	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Solve the following function using Karnaugh Map: i. F(A,B,C,D)=Σ(0,1,2,4,5,6,8,9,12,13,14) ii. F(w,x,y,z) = Σ (1,3,7,11,15) + d(0,2,5)	L3	1	16
			Or			
	b		Apply the multiplexer and Simplify the following function using 8x1 Mux F (A, B, C, D) = Σ(0,1,3,4,8,9,15).	L3	1	16
12.	a		Analyze the working of SR, JK, D, and T flip-flops. Draw the operation and excitation tables for each flip-flop with logic diagrams.	L4	2	16
			Or			
	b		Examine the different types of shift registers with neat diagram.	L4	2	16
13.	a	i	Illustrate about ISA with relevant diagrams.	L2	3	8
		ii	Illustrate the von Newmann architecture with neat diagram.	L2	3	8
			Or			
	b		Explain the different types of addressing modes with an example.	L2	3	16

14.	a	Classify the different types of data paths used in computer architecture and discuss their respective advantages and disadvantages.	L4	4	16
		Or			
	b	Examine a 4 stage Instruction Pipeline. Explain the issues affecting Pipeline performance.	L4	4	16
15.	a	Explain how virtual memory management supports multitasking in operating systems. Give one practical example.	L2	5	16
		Or			
	b	Explain the importance of DMA in reducing CPU workload during data transfers. Provide an example.	L2	5	16