LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.C.A. DEGREE EXAMINATION – **COMPUTER APPLICATIONS**

FIRST SEMESTER – **NOVEMBER 2024**

UCA1MC03 – COMPUTER ORGANIZATION AND ARCHITECTURE

Date: 13-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

		SECTION A - K1 & K2 (CO1)
Q.No	Levels	**Answer ALL the Questions** **(10 x 2 = 20)**
1	K1	What are Don't care conditions in Simplification?
2		Define adders.
3		Define flip-flop.
4		Mention the applications of shift register.
5		Find the given binary number (100110) to grey code.
6	K2	Demonstrate the arithmetic addition 1001+10101+1111.
7		Summarize instruction Codes in computer organization.
8		Explain common bus system.
9		Outline the arithmetic instructions.
10		Show the components of CPU.
		SECTION B – K3 & K4 (CO2)
		Answer ALL the Questions **(4 x 10 = 40)**
11	K3	Solve using Map method for the given Function. a. $F(X,Y,Z)=\sum(1,3,5,7)$ b. $F(A,B,C)=\pi(0,2,4,6)$ **[OR]**
12		Construct the various logic gates with truth tables and explain.
13		Construct SISO and PISO and explain. **[OR]**
14		Identify and explain the working of multiplexer and demultiplexer in detail.
15	K4	Analyze and convert the following a. Decimal $(7894)_{10}$ to Octal. b. Octal $(453)_8$ to Hexadecimal. **[OR]**
16		Inference error detection method with an example.
17		Distinguish the various computer registers in computer organization. **[OR]**
18		Examine Logical and bit Manipulation instruction with examples.

SECTION C – K5 & K6 (CO3)			
	Answer ALL the Questions		**(2 x 20 = 40)**
19	K5	A. Explain the working of JK flip flop.	(10)
		B. Explain encoders with a neat diagram and truth table.	(10)
		[OR]	
20		Evaluate the following a. Perform subtraction 10111 -1010 using 1's and 2's complement b. Perform subtraction 1011 -1000 using 1's and 2's complement c. Perform Addition 1010 and -1001 using 1's and 2's complement d. Perform Addition 0111 and -1000 using 1's and 2's complement	
21	K6	A. Discuss about Addressing modes.	(10)
		B. Elaborate Instruction format in detail.	(10)
		[OR]	
22		Design a block diagram of general register organization explain its working.	
