Subject Code: KCA105

PAPER ID-411334

Roll No: | | | | | | | | | | | | | |

MCA
(SEM I) THEORY EXAMINATION 2021-22
COMPUTER ORGANIZATION & ARCHITECTURE

Time: 3 Hours ***Total Marks: 100***

Notes:

- *Attempt all Sections and assume any missing data.*
- *Appropriate marks are allotted to each question, answer accordingly.*

SECTION-A	Attempt **All** of the following Questions in brief	Marks**(10X2=20)**	**CO**
Q1(a)	What are the various facts related to bus and bus system?		
Q1(b)	What is arithmetic and logic circuit?		
Q1(c)	Describe the micro-programming sequencing.		
Q1(d)	What do you mean by programming of ROM?		
Q1(e)	What is the function of I/O interface?		
Q1(f)	Discuss the basic component of register transfer logic.		
Q1(g)	What is the main advantage of RTL?		
Q1(h)	Define the goal of CISC architecture.		
Q1(i)	Define the goal of RISC architecture.		
Q1(j)	What are the modes of data transfer?		

SECTION-B	Attempt **ANY THREE** of the following Questions	Marks**(3X10=30)**	**CO**
Q2(a)	What is programmable logic device? List various techniques to program PLD. Explain any one technique with example.		
Q2(b)	Write Short Notes on any two of the following: i) Central Processing Unit (CPU). iii) Input/output Interface. ii) Input/output Ports.		
Q2(c)	Show step by step the multiplication process using booth's algorithm when (+15) and (-13) numbers are multiplied.		
Q2(d)	Assume 5 – bit registers that hold signed numbers.		
Q2(e)	Explain various types of processor organization.		

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q3(a)	Explain General-purpose register based organization.		
Q3(b)	What is the Stack organization? Compare register stack and memory stack.		

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q4(a)	Explain the Booth's algorithm in depth with the help of flowchart. Give an example for multiplication using Booth's algorithm.		
Q4(b)	Perform the division process of 00001111 by 0011 (use a dividend of 8 bits).		

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q5(a)	Evaluate the arithmetic statements X=(A+B)*(C+D) using a general register computer with three address, two address and one address instruction format a program to evaluate the expression.		
Q5(b)	Explain hardwired control unit. What are the methods to design hardwired controllers?		

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q6(a)	A ROM chip of 1024*8 has four select inputs and operates from a 5volt power supply. How many pins are needed for the IC package? Draw a block diagram and label all input and output terminals in the ROM.		
Q6(b)	Explain 2D, 2 ½D memory organizations.		

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q7(a)	Give the block diagram of DMA controller. Why are the read and write control lines in a DMA controller bidirectional?		
Q7(b)	What do you mean by serial communication? What are the transmission modes of serial communication?		