

**K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22**  
(Autonomous College Affiliated to University of Mumbai)

Subject Code: CEC304 Subject Name: Digital Logic & Computer Architecture Date: 10/12/22

Nov – Dec 2022-23				
(B.Tech ) Program: Computer Engineering				
Examination: SY Semester: III				
Course Code: CEC304 and Course Name: Digital Logic & Computer Architecture		Max. Marks: 60		
Duration: 2.5 Hours				
Instructions:				
(1)All questions are compulsory.				
(2)Draw neat diagrams wherever applicable.				
(3)Assume suitable data, if necessary.				
		Max. Marks	CO	BT level
<b>Q 1</b>	<b>Solve any six questions out of eight:</b>	<b>12</b>		
i)	Convert $(1762.46)_{10}$ into octal.	2	CO1	Ap
ii)	Represent $(25)_{10}$ into Excess-3 code and Gray code	2	CO1	Ap
iii)	Describe various instruction formats.	2	CO3	U
iv)	Subtract using 1's complement $(73)_{10} - (49)_{10}$	2	CO2	Ap
v)	State the difference between SRAM and DRAM	2	CO5	U
vi)	Explain Universal Serial Bus(USB)	2	CO6	U
vii)	Explain the concept of Nano programming.	2	CO4	U
viii)	Explain Priority encoder.	2	CO3	U
<b>Q.2</b>	<b>Solve any four questions out of six</b>	<b>16</b>		
	State and prove De-morgans theorem.	4	CO1	Ap
ii)	Draw and Explain flow chart for add and shift method for integer multiplication.	4	CO2	U
iii)	Design the 4:1 Multiplexer(MUX) with a logic diagram	4	CO3	Ap
iv)	Compare Hardwired and micro programmed control unit.	4	CO4	U
v)	Describe different memory organization characteristics.	4	CO5	U
vi)	Describe 6 stage pipelining in superscalar architecture	4	CO6	U

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<b>Q.3</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	Multiply $(10)_{10}$ and $(8)_{10}$ using Booth's Algorithm.	8	CO2	Ap
ii)	Design a 3 to 8 line decoder with a logic diagram and explain it.	8	CO3	Ap
iii)	Explain the wilkies micro programmed control unit	8	CO4	U
<b>Q.4</b>	<b>Solve any two questions out of three</b>	<b>16</b>		
i)	Explain the Von Neumann Architecture and Harvard architecture.	8	CO1	U
ii)	Explain cache memory in details with its features.	8	CO5	U
iii)	Explain Bus Arbitration in details.	8	CO6	U

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