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

	Nov – Dec 2025
	(B. Tech) Program: Computer Engineering Scheme III
	Regular Examination: SY Semester: III
	Course Code: CEC304 and Course Name: Digital Logic & Computer Architecture
Date of Exam: 04-12-2025 Duration: 02.5 Hours	Max. Marks: 60

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any **two** questions out of three: (05 marks each)	10		
a)	Differentiate between Computer Organization and Computer Architecture		CO1	U
b)	The gray code is "10010.01101". Convert it into Octal, BCD & Excess-3 code.		CO1	AP
c)	Implement the following expression using 8:1 MUX $F(A,B,C,D) = \sum m(0,3,4,6,7,10,15)$		CO3	AP
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Explain Micro instruction format and write a micro program for the instruction ADD R1, R2		CO4	Ap
b)	Describe in brief Cache coherence and write policies		CO5	U
c)	Explain Branch hazards in detail with example.		CO6	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	With proper flowchart explain restoring binary division algorithm and Evaluate 13/3 using restoring binary division algorithm.		CO2	AP
b)	a) Explain Register Organization in detail. [5M]		CO3	U
	b) Explain the different addressing modes with example [5M]	5		U

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c)	i) Explain functioning of the micro-programmed control unit in detail with diagram. [5M] ii)Differentiate between Hardwired control unit and Micro programmed control unit [5M]		CO4	U
Q.4	Solve any **two** questions out of three. (10 marks each)	20		
a)	i) Explain the IEEE 754 Single Precision Format in detail. [5M] ii)Convert (12.3125)$_{10}$ into IEEE 754 Single Precision representation.[5M]		CO2	AP
b)	Explain the characteristics of the Memory and also explain Interleaved memory in detail with diagram.		CO5	U
c)	Explain Instruction Pipelining in detail. Discuss data and structural hazards with example.		CO6	U

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