

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

IB
~~Jan - Feb 2026~~

~~Nov - Dec 2025~~

(B. Tech / M. Tech.) Program: Artificial Intelligence and Data Science Scheme: IIB

~~Regular~~ Supplementary Examination: SY Semester: III

Course Code: AIC304 and Course Name: Digital Logic and Computer Architecture

Date of Exam: ~~02/12/2025~~ **05/02/26** 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)	Explain Von-Neumann's architecture in detail.		CO1	U
b)	Perform BCD Subtraction addition i) $(46)_{10} - (16)_{10}$ ii) $(56)_{10} - (12)_{10}$		CO2	Ap
c)	Draw a full adder using logic gates and write its truth table.		CO3	U
Q.2	Solve any two questions out of three. (10 marks each)	10		
a)	What is bus contention and arbitration?		CO6	U
b)	What is cache memory? Explain Locality of reference and its types.		CO5	U
c)	Explain microinstruction format.		CO4	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Perform Conversion of given decimal numbers into BCD, gray code and XS-3 code. i) $(256)_{10}$ ii) $(345)_{10}$		CO1	U
b)	Perform Multiplication of the following numbers using Booth's Algorithm. $(4)_{10} \times (5)_{10}$		CO2	Ap
c)	State and explain types of 8086 addressing modes.		CO3	U
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Compare RISC and CISC architecture.		CO4	U
b)	Explain associative memory with a suitable diagram..		CO5	U
c)	Describe Flynn classification in detail.		CO6	U