

Subject Name: Computer Organization and Architecture
Subject Code: 25CYS109T

Max. Marks: 25
Time: 1:30 Hrs.

Instructions

- All Questions are Compulsory.
- Scientific calculators not allowed.

CO #	Cognitive Ability	Course Outcome
CO1	Remember	Recall the basic concepts of number systems & codes, terminology of computer organization, architecture, and system components.
CO3	Apply	Apply knowledge of SOP/POS equations & computer system architecture.
CO4	Analyse	Analyze the performance of different SOP/POS equations and system components.

Q1.	Attempt any 5 out of 7. (1 mark each) (5 Marks) a) What is the Base of binary number system? b) Write the answer for given binary subtraction $(1101)_2 - (1000)_2 = (\dots\dots\dots)_2$ c) Which logic gate follows the given statement? “If one of i/p is logic-0 then the o/p of the gate is logic-0”. d) Which type of Counter works very fast? (Synchronous or Asynchronous) e) Which memory is Volatile? (RAM or ROM) f) The given statement is true or false. “Because of Cache memory Computer system works very slow”. g) List the types of Buses used in computer system.	CO1
Q2.	Attempt any 2 out of 4. (5 marks each) (10 Marks) a) Convert the given codes step by step: i) $(36.4)_8 = (\dots\dots\dots)_{10}$ ii) $(10010)_{BCD} = (\dots\dots\dots)_2$ b) Draw the logic diagrams for Half Subtractor & Full Adder. c) What is use of Boolean laws? Write any 4 Boolean laws. d) Explain the General block diagram of I/O interface unit.	CO3
Q3.	Attempt any one Question (A or B). (5 marks each) (10 Marks) A) a) Which are the Basic gates, Universal Gates & Derived gates? Also draw truth table for derived gates. b) Solve the given Boolean Equation using K-Map & draw the logic diagram for solved equation. $Y_{(ABC)} = \sum (0,1,3,4,5)$ OR B) a) Define Hit ratio. Find the average access time for computer, if Hit ratio is 96%. Given: Cache memory Access time, $T_c = 10\mu s$ & Main memory Access time, $T_m = 50\mu s$ (μs = Microseconds). b) Define memory hierarchy. Explain with suitable diagram 3-level memory hierarchy.	CO4
