INDIRA UNIVERSITY, PUNE

SET-5

SCHOOL OF INFORMATION TECHNOLOGY- BCA

Backlog Examination (2025 Pattern) April/ May – 2026 - Semester – I

Subject Name: Computer Organization and Architecture **Max. Marks: 25**
Subject Code: 25BCA112T **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.

Q 1.	**Attempt any 5 out of 7. (1 mark each) (5 Marks)** **a)** What is the base of Octal number system? **b)** Write the answer for given binary subtraction: $(1111)_2 - (1001)_2 = (\ldots\ldots\ldots)_2$ **c)** Which logic gate follows the given statement? **"If one of i/p is logic-1 then the o/p of the gate is logoc-1".** **d)** Which Counter works very slow? **(Synchronous or Asynchronous)** **e)** ROM a volatile or non-volatile memory? **f)** What is the use of buses in computer systems? **g)** List any two examples of Secondary memories used in computer system.	**CO1**
Q 2.	**Attempt any 2 out of 4. (5 marks each) (10 Marks)** **a)** Which are Basic gates, Universal Gates & Derived gates? Also draw the symbol & truth table for Universal gates. **b)** Draw the logic diagrams for Half Adder & Full Subtractor. **c)** Where are Boolean rules are used? Write any 4 Boolean rules. **d)** Explain the General block diagram of Daisy chaining priority interrupt.	**CO3**
Q 3.	**Attempt any one Question (A or B). (5 marks each) (10 Marks)** **A) i)** Convert the given codes step by step: **i)** $(1011.11)_2 = (\ldots\ldots\ldots\ldots)_{10}$ **ii)** $(35)_8 = (\ldots\ldots\ldots\ldots)_{BCD}$ **ii)** Solve the given Boolean Equation using K-Map & draw the logic diagram for solved equation. $Y_{(ABC)} = \sum (1,3,4,5,7)$ **OR** **B) i)** What is need of Cache Memory? Find the average access time for computer, if Hit ratio is **90%.** Given: Cache memory Access time, **Tc= 20µs** & Main memory Access time, **Tm= 100 µs** (µs=Microseconds). **ii)** What is need of memory in computer system? Explain with suitable diagram 3-level memory hierarchy.	**CO4**

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