SANATAN DHARMA COLLEGE, AMBALA CANTT
College with Potential for Excellence, UGC,New Delhi
NAAC Accredited Grade "A+" with CGPA 3.51 in 3rd cycle
ISO 9001:2015 & ISO 14001:2015 Certified

Department of Computer Science
Lesson Plan (Session 2022-2023)

Class: BCA   **Sem: I**   **Sec-A & B Course Code: BCA-114**
Nomenclature: Logical Organization of Computers-I
Duration: 16 Weeks   **Dates: 5 Sep,2022- 25 Dec, 2022**

SYLLABUS
BCA-114 Logical Organization of Computers-I

Maximum Marks: 100   **External: 80**   **Minimum Pass Marks: 35**
Internal: 20   **Time: 3 hours**

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT - I

Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floating-point representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC.

UNIT - II

Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables, Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.

UNIT - III

Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures.

UNIT - IV

Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor, Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters.

TEXT BOOKS
1. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.
2. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall of India Pvt. Ltd.

Course Outcomes

After the completion of this course, prospective Computer professionals will have the ability to

CO-1	Identify, understand and apply Number Systems, Binary Arithmetic, Fixed-pointand Floatingpoint representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC.
CO-2	Apply Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions andTruth Tables,Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.
CO-3	Design Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR,OtherGates – XOR, XNOR etc. implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures
CO-4	Design Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor,Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters.

S.No	Instructional Technique	Assessment Methods (AM)
1	Chalk & Talk	**Assignments**
2	ICT tools	**Quiz**
3	Group discussions	**Group Discussions**
4	Industrial visit	**Oral Tests**
5	Case studies	**Sessional**
6	Small Projects	**Presentations**
7	Workshop	**Seminar**
8	Spoken Tutorials	**University Exams**
9	Flipped Class	
10.	**E-Resources**	

Detailed Lesson Plan Sec-A

Week	Date	Topic to be Covered	Instructional Technique	Assessment Method
1	8- Sep-22	**Number Systems**	**2-(PPT/Projector)**	**----**
	9- Sep-22	**Types of Number Systems**	**1**	**1,2,3,4**
	10-Sep-22	**Binary Number system**	**1**	**1,2,3,4**
2	15-Sep-22	**Decimal Number system**	**1**	**1,2,3,4**
	16-Sep-22	Octal Number System	**1**	**1,2,3,4**
	17-Sep-22	**Hexadecimal Number System**	**1**	**1,2,3,4**
3	22-Sep-22	Binary Arithmetic	**1**	**1,2,3,4**
	23-Sep-22	Holiday		
	24-Sep-22	Fixed-point and Floating-point representation of numbers	2-(PPT/Projector)	1,2,3,4
4	29-Sept-22	**Fixed-point and Floating-point representation of numbers**	2-(PPT/Projector)	**1,2,3,4**
	30-Sept-22	**Error detecting and correcting codes**	2-(PPT/Projector)	1,2,3,4
	01-OCT-22	**Error detecting and correcting codes**	2-(PPT/Projector)	1,2,3,4
5	6-Oct-22	**Character Representation**	9,10	1,2,3,4
	7-Oct-22	ASCII, **EBCDIC**	9,10	1,2,3,4
	8-Oct-22	**Revision**	2-(PPT/Projector)	1,2,3,4
6	13-Oct-22	Holiday		
	14-Oct-22	Boolean Algebra	---	6
	15-Oct-22	**Boolean Theorems**	9	1,2,3,4,6
7	20-Oct-22	**Boolean Functions and Truth Tables**	6	1,2,3,4,
	21-Oct-22	**Boolean Functions and Truth Tables**	6	1,2,3,4,
	22-Oct-22 to 26-Oct-22	Diwali Vaccation		
8	27-Oct-22	**Canonical and Standard forms of Boolean functions**	6	1,2,3,4
	28-Oct-22	**Simplification of Boolean Functions**	6	1,2,3,4
	29-Oct-22	**Venn Diagram**		1,2,3,4
9	3-Nov-22	**Karnaugh Maps**	9,10	1,2,3,4
	4-Nov-22	**Karnaugh Maps**	9,10	
	5-Nov-22	**AND, OR, NOT,**	2-(PPT/Projector)	1,2,3,4
10	10-Nov-22	**Universal Gates – NAND, NOR**	2-(PPT/Projector)	1,2,3,4
	11-Nov-22	**Universal Gates – NAND, NOR**	2-(PPT/Projector)	1,2,3,4

	12-Nov-22	**Other Gates – XOR, XNOR**	2-(PPT/Projector)	1,2,3,4
11	17-Nov-22	**Characteristics of combinational circuits**	6	1,2,3,4
	18-Nov-22	**Design Procedures, analysis procedures.**	6	1,2,3,4
	19-Nov-22	**Sessional**	--	
12	24-Nov-22	**Combinational Circuits**	2-(PPT/Projector)	1,2,3,4
	25-Nov-22	**Half-Adder, Full-Adder**	2-(PPT/Projector)	1,2,3,4
	26-Nov-22	**Half-Subtractor,Full-Subtractor**	6	1,2,3,4
13	1-Dec-22	**Encoders**	2-(PPT/Projector)	1,2,3,4
	2-Dec-22	**Decoders**	6	1,2,3,4
	3-Dec-22	**Multiplexers**	2-(PPT/Projector)	1,2,3,4
14	8-Dec-22	Demultiplexers	9,10	1,2,3,4
	9-Dec-22	**Revision**		1,2,3,4
	10-Dec-22	**Class Test**	2-(PPT/Projector)	1,2,3,4
15	15-Dec-22	**Comparators**	2-(PPT/Projector)	1,2,3,4
	16-Dec-22	**Comparators**	6	1,2,3,4
	17-Dec-22	**Code Converters**	6	1,2,3,4
16	22-Dec-22	**Code Converters**	2-(PPT/Projector)	1,2,3,4
	23-Dec-22	Revision	6	1,2,3,4
	24-Dec-22	**Revision**	--	--

Detailed Lesson Plan Sec B

Week	Date	Topic to be Covered	Instructional Technique	Assessment Method
1	5- Sep-22	**Number Systems**	**1**	**----**
	6-Sep-22	**Types of Number Systems**	**1**	**1**
	7- Sep-22	**Binary Number system**	**1**	**1**
2	12-Sep-22	**Decimal Number system**	**1**	**1,2,3,4**
	13-Sep-22	Octal Number System	**1**	**1,2,3,4**
	14-Sep-22	**Hexadecimal Number System**	**1**	**1,2,3,4**
3	19-Sep-22	Binary Arithmetic	**2-(PPT/Projector)**	**1,2,3,4**
	20-Sep-22	**Fixed-point and Floating-point representation of numbers**	**2-(PPT/Projector)**	**1,2,3,4**
	21-Sep-22	**Fixed-point and Floating-point representation of numbers**	**2-(PPT/Projector)**	**1,2,3,4**
4	26-Sept-22	**Holiday**	**--**	**---**
	27-Sept-22	**Error detecting and correcting codes**	**2-(PPT/Projector)**	**1,2,3,4**
	28-Sept-22	**Error detecting and correcting codes**	**2-(PPT/Projector)**	**1,2,3,4**
5	3-Oct-22	**Character Representation**	**9,10**	**1,2,3,4**
	4-Oct-22	ASCII, EBCDIC	**9,10**	**1,2,3,4**
	5-Oct-22	**Revision**		**1,2,3,4**
6	10-Oct-22	Boolean Algebra	**---**	**6**
	11-Oct-22	**Boolean Theorems**	**9**	**1,2,3,4,6**
	12-Oct-22	**Boolean Functions and Truth Tables**	**6**	**1,2,3,4,**
7	17-Oct-22	**Canonical and Standard forms of Boolean functions**	**6**	**1,2,3,4,**
	18-Oct-22	**Simplification of Boolean Functions**	**6**	**1,2,3,4**
	19-Oct-22	Venn Diagram	**6**	**1,2,3,4**
	22-Oct-22 to 26-Oct-22	**Diwali Vaccation**	**--**	**--**
8	31-Oct-22	Karnaugh Maps	**2-(PPT/Projector)**	**1,2,3,4**
	1-Nov-22	**Holiday**		
	2-Nov-22	**Karnaugh Maps**	**2-(PPT/Projector)**	**1,2,3,4**
9	7-Nov-22	**Revision**	**2-(PPT/Projector)**	**1,2,3,4**
	8-Nov-22	**Holiday**		
	9-Nov-22	**AND, OR, NOT,**	**2-(PPT/Projector)**	**1,2,3,4**
10	14-Nov-22	**Universal Gates – NAND, NOR**	**2-(PPT/Projector)**	**1,2,3,4**
	15-Nov-22	**Universal Gates – NAND,**	**6**	**1,2,3,4**

		NOR		
	16-Nov-22	**Other Gates – XOR, XNOR**	**6**	**1,2,3,4**
11	21-Nov-22	Characteristics of combinational circuits	**--**	**5**
	22-Nov-22	**Design Procedures, analysis procedures.**	**2-(PPT/Projector)**	**1,2,3,4**
	23-Nov-22	**Revision**	**2-(PPT/Projector)**	**1,2,3,4**
12	28-Nov-22	**Combinational Circuits**	**6**	**1,2,3,4**
	29-Nov-22	**Half-Adder, Full-Adder**	**2-(PPT/Projector)**	**1,2,3,4**
	30-Nov-22	**Half-Subtractor,Full-Subtractor**	**6**	**1,2,3,4**
13	5-Dec-22	**Encoders**	**2-(PPT/Projector)**	**1,2,3,4**
	6-Dec-22	Decoders	**9,10**	**1,2,3,4**
	7-Dec-22	**Multiplexers**	**9,10**	**1,2,3,4**
14	12-Dec-22	**Demultiplexers**	**2-(PPT/Projector)**	**1,2,3,4**
	13-Dec-22	**Revision**	**2-(PPT/Projector)**	**1,2,3,4**
	14-Dec-22	**Class Test**	**6**	**1,2,3,4**
15	19-Dec-22	**Comparators**	**6**	**1,2,3,4**
	20-Dec-22	**Comparators**	**2-(PPT/Projector)**	**1,2,3,4**
	21-Dec-22	**Code Converters**	**6**	**1,2,3,4**
16	22-Dec-22		**--**	**--**
	23-Dec-22		**--**	**--**