DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS
DIGITAL LOGIC DESIGN
I YEAR II SEM 2023-24
QUESTION BANK
UNIT – I

Short answer questions

S.NO	QUESTIONS	BLOOMS Taxonomy	CO	PO
1	Convert the following decimal number to the base indicated a. 7562 to octal b. 1938 to hexadecimal	BL-5		
2	Find the 1's and 2's complement of the following eight digit binary number a. 10101110 b. 10000001	BL-1		
3	Convert (15) 10 to Binary	BL-1		
4	Convert the following decimal number to the base indicated a. 17562 to octal b. 11938 to hexadecimal	BL-5		
5	Briefly explain r's complement with example	Bl-2		
6	Convert the following to binary and then to gray code (AB33)16	BL-1		

Long answer questions

SNO	QUESTIONS	BLOOMS TAXONOMY	CO	PO
1	Explain classification of Number system with example	BL-2		
2	a) Represent the decimal number 3452 in i)BCD ii)Excess-3 b) perform (-50)-(-10) in binary using the signed-2's complement	BL-5		
3	a) Convert the following numbers i)(163.789)10 to Octal number ii)(11001101.0101)2 to base-8 and base-4 iii)(4567)10 to base2 iv) (4D.56)16 to Binary b) Subtract (111001)2 from (101011) using 1's complement?	BL-5		
4	Explain detail about weighted and	BL-2		

| 5 | weighted codes | | | |
| | Briefly explain r's and (r-1) complement with example | BL-2 | | |

UNIT – II

Short answer questions

S.NO	QUESTIONS	BLOOMS Taxonomy	CO	PO
1	Which gates are called as the universal gates? What are its advantages?	BL-5		
2	State the associative property of Boolean algebra	BL-1		
3	Define Minterm & Maxterm	BL-1		
4	What are called don't care conditions?	BL-5		
5	State De Morgan's theorem	BL-2		
6	What is meant by karnaugh map or K-Map method?	BL-1		

Long answer questions

SNO	QUESTIONS	BLOOMS TAXONOMY	CO	PO
1	Simplify the Boolean expression using K-MAP (L5) $F(A,B,C,D,E)= \sum m(0,1,4,5,16,1721,25,29)$	BL-5		
2	Simplify the Boolean expression using K-MAP $F(A,B,C,D) = \sum m(1,2,3,8,9,10,11,14) +d(7,15)$	BL-5		
3	Obtain the a) SOP b) POS expression for the function given below $F(A,B,C,D)= = \sum m(0,1,2,5,8,9,10)$	BL-5		
4	Simplify the Boolean expressions to minimum number of literals i) $(A + B)(A + C')(B' + C')$ (ii) $AB + (AC)' + AB'C$ $(AB +$ iii) $(A+B)' (A'+B')'$	BL-5		
5	Demonstrate the logic gates	BL-2		

UNIT – III

Short answer questions

S.NO	QUESTIONS	BLOOMS Taxonomy	CO	PO
1	Define Half adder	BL-1		
2	Define full adder	BL-1		
3	Define subtractor	BL-2		
4	What is ripple adder	BL-2		
5	What is the truth table of Half-subtractor?	BL-1		

Long answer questions

SNO	QUESTIONS	BLOOMS TAXONOMY	CO	PO
1	Explain detail about half adder and full adder	BL-2		
2	Explain Full binary subtractor in detail?	BL-5		
3	Design and explain 4-bit adder-subtractor and 4-bit arithmetic circuit to perform addition and subtraction using full adders.	BL-5		
4	Design 4 bit Adder and Subtractor circuit and explain its operations.	BL-5		
5	Draw the circuit diagram of 4-bit adder-subtractor circuit and explain its operation	BL-2		
6	Explain The Half adder? Implement the full adder using two half adders	BL-2		

UNIT – IV

Short answer questions

S.NO	QUESTIONS	BLOOMS Taxonomy	CO	PO
1	What is Decoder	BL-2		
2	Define Encoder	BL-1		
3	Construct 4:1 multiplexer	BL-1		
4	Define de-multiplexer?	BL-1		
5	What is priority encoder	BL-2		
6	Define Multiplexer and applications of	BL-1		

	multiplexer?			
7	Difference between encoder and decoder	BL-2		

Long answer questions

SNO	QUESTIONS	BLOOMS TAXONOMY	CO	PO
1	What is multiplexer Explain the functionality of a Multiplexer	BL-2		
2	What is decoder Explain the functionality of a decoder	BL-2		
3	Design for 3 to 8 decoder with 2 to 4 decoder	BL-5		
4	Implement the boolean function using Multiplexer. [NOV – 2019] F (x, y, z) = Σm (1, 2, 6, 7)	BL-5		
5	Explain about demultiplexers	BL-2		

UNIT – V

Short answer questions

S.NO	QUESTIONS	BLOOMS Taxonomy	CO	PO
1	What is sequential circuits	BL-2		
2	What is the operation of D flip-flop	BL-1		
3	What is flip-flop	BL-1		
4	Define Race Around Condition	BL-2		
5	Difference between latch and flip-flop	BL-2		
6	Define Propagation Delay	BL-1		
7	What is Master Slave Flip-flop	BL-2		
8	Explain Shift Registers	BL-2		
9	What are the applications of Flip-flops	BL-2		

Long answer questions

SNO	QUESTIONS	BLOOMS TAXONOMY	CO	PO
1	Design and analyze of clocked sequential circuit with an example.	BL-2		
2	Define Flip-flop and various types of flip flops?	BL-2		

3	Design of shift registers bidirectional shift registers,	BL-2		
4	What is counter design of ripple counters	BL-2		
5	Explain about universal shift register	BL-2		