I No. | | | | | | | | | |

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COER University

END SEMESTER EXAMINATION, EVEN SEM 2022-23

e : 3 hours
gram Name : BCA
rse Name : Basics of Digital Electronics

Total Marks : 100
Semester : II
Course Code : BCA211

e: All questions are compulsory. No student is allowed to leave the examination hall before the completion of the .

No 1	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	The octal equivalence of (11001101.111)2 is.	CO 1	2
(b)	Convert the following numbers as indicated; a) $(11110101)_2 = (?)_{10}$ b) $(D9C.24D)_{16} = (?)_2$	CO 1	2
(c)	Design a 2 to 4 line decoder circuit.	CO 3	3
(d)	Define Race Around Condition in J-K Flip Flop.	CO 4	3
(e)	Write the excitation tables for JK and T Flip-Flop.	CO 4	3

Q. No 2	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Perform the subtraction in the following unsigned binary number using 2's complement method. $(23)_{10} - (39)_{10}$	CO 1	2
(b)	Encode the binary word 1011 into seven bit even parity hamming code.	CO 2	1
(c)	Design a 4 bit binary parallel Adder and the explain operation in detail.	CO 3	3
(d)	Design a 1:4 De-multiplexer circuit.	CO 3	3
(e)	Implement the following function by using Basic gates: $f = \bar{A}BCD + B\bar{C}\bar{D} + A\bar{C} + AB\bar{C}$	CO 2	3

Q. No 3	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Convert F(A,B,C)= A'B+BC+A'B'C' into the equivalent canonical SOP form.	CO 1	2
(b)	Design J-K flip-flop using T flip-flop.	CO 4	3
(c)	Explain 4-bit Asynchronous ripple counters and also draw it's output waveform.	CO 5	2
(d)	Design and explain 8:1 MUX.	CO 3	2,3
(e)	What is priority Encoder? Design and explain working of a 4-input priority encoder.	CO 3	2,5

Q. No 4	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Simplify following function using K-Map and implement by using Basic Gates only. $F(A,B,C,D) = \Sigma m(2, 4, 6, 10, 12, 14, 15) + \Sigma d(0, 1, 5, 7, 8, 13)$	CO 2	1
(b)	Design MOD- 10 synchronous counter using T flip flop.	CO 5	2
(c)	Perform the following; 1. $(480.21)_{10}$ to $(?)_6$ 2. $(E4465.225)_{16}$ to $(?)_8$ 3. $(354)_7 + (624)_7$	CO 1	2

Q. No 5	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Simplify following function using K-Map and implement by using NAND Gates only. $F(W,X,Y,Z) = \Pi M (0, 3, 9, 11, 12) + \Sigma d(6, 7, 14, 15)$	CO 2	1
(b)	Explain the operation of master slave flip-flop and show how the race around condition is eliminated in it.	CO 4	3
(c)	i) Design 2-bit synchronous-up counter by using JK flip-flop. ii) Design 2-bit synchronous-up counter by using D flip-flop.	CO 5	5

----------End of Paper----------

Roll No. | | | | | | | | | | |

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(e)	Write the excitation tables for JK and T Flip-Flop.	CO 4	3

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(d)	Design a 1:4 De-multiplexer circuit.	CO 3	3
(e)	Implement the following function by using Basic gates: $f = \bar{A}BCD + B\bar{C}\bar{D} + A\bar{C} + AB\bar{C}$	CO 2	3

Q. No 3	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Convert F(A,B,C)= A'B+BC+A'B'C' into the equivalent canonical SOP form.	CO 1	2
(b)	Design J-K flip-flop using T flip-flop.	CO 4	3
(c)	Explain 4-bit Asynchronous ripple counters and also draw it's output waveform.	CO 5	2
(d)	Design and explain 8:1 MUX.	CO 3	2,3
(e)	What is priority Encoder? Design and explain working of a 4-input priority encoder.	CO 3	2,5

Q. No 4	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Simplify following function using K-Map and implement by using Basic Gates only. $F(A,B,C,D) = \Sigma m(2, 4, 6, 10, 12, 14, 15) + \Sigma d(0, 1, 5, 7, 8, 13)$	CO 2	1
(b)	Design MOD- 10 synchronous counter using T flip flop.	CO 5	2
(c)	Perform the following: 1. $(480.21)_{10}$ to $(?)_6$ 2. $(E4465.225)_{16}$ to $(?)_8$ 3. $(354)_7 + (624)_7$	CO 1	2

Q. No 5	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Simplify following function using K-Map and implement by using NAND Gates only. $F(W,X,Y,Z) = \Pi M (0, 3, 9, 11, 12) + \Sigma d(6, 7, 14, 15)$	CO 2	1
(b)	Explain the operation of master slave flip-flop and show how the race around condition is eliminated in it.	CO 4	3
(c)	i) Design 2-bit synchronous-up counter by using JK flip-flop. ii) Design 2-bit synchronous-up counter by using D flip-flop.	CO 5	5

----------End of Paper----------