

Hall Ticket Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Code No. : 15360 N/O

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (E.E.E.) V-Semester Main & Backlog Examinations, Jan./Feb.-2024**Digital Electronics**

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B****Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Convert the Hexa decimal number F3A7C2 to Binary and Octal.	2	1	1	1,2,3,9
2.	Simplify the following Boolean expressions to a minimum number of literals. (a) $x'y' + xy + x'y$ (b) $(x + y)(x + y')$	2	2	1	1,2,3,9
3.	Simplify the Boolean function $F(x,y,z) = \Sigma(2,3,4,5)$	2	2	1	1,2,3,9
4.	Implement the Boolean function $F(a,b,c) = \Sigma(1,3,5,6)$ using Multiplexer.	2	2	1	1,2,3,9
5.	Draw a 3-bit ring counter and mention the number of states present in a 10 bit ring counter.	2	2	2	1,2,3,9
6.	Explain the difference between a Flip Flop and a Latch.	2	1	2	1,2,3,9
7.	In a Analog to Digital converter what is the sampling frequency of the signal whose f_{max} is 2 kHz.	2	3	3	1,2,3,9
8.	Calculate the percentage resolution for a 4 bit Digital to Analog conversion for a V_{REF} of 15V.	2	3	3	1,2,3,9
9.	To implement $64 * 8$ ROM, what is the size of address bits and the data bits.	2	3	4	1,2,3,9
10.	Illustrate the difference between Static RAM and dynamic RAM.	2	3	4	1,2,3,9
Part-B (5 × 8 = 40 Marks)					
11. a)	Draw and explain Totem pole TTL NAND gate.	4	1	1	1,2,3,9
b)	Given two decimal numbers $A=45734$, $B=3250$ perform the subtraction a) $A-B$ b) $B-A$ Using 9's complement	4	2	1	1,2,3,9
12. a)	Draw and explain BCD adder.	4	2	2	1,2,3,9
b)	Simplify the following function using tabulation method $F(w,x,y,z) = \Sigma(0,1,2,8,10,11,14,15)$ also determine the essential prime implicant through prime implication table.	4	4	2	1,2,3,9

Contd... 2

13. a)	Draw and explain MOD-5 Asynchronous up counter.	4	2	2	1,2,3,9
b)	Convert SR Flip Flop to JK Flip Flop.	4	2	2	1,2,3,9
14. a)	Draw and explain R - 2R Digital to Analog converter.	4	2	3	1,2,3,9
b)	For a dual slope ADC of a digital voltmeter, the reference voltage is 800 mV and the first integration time is set to 400 msec, for some input voltage the de-integration period is 460.2 msec, what is the reading of the digital voltmeter?	4	3	3	1,2,3,9
15. a)	Implement the following functions $F_1(A_1, A_0) = \Sigma(1,2,3)$, $F_2(A_1, A_0) = \Sigma(0,2)$ using 4×2 ROM.	4	3	4	1,2,3,9
b)	Implement the following combinational circuit using PLA. $F_1 = \Sigma(3,5,6,7)$, $F_2 = \Sigma(0,2,4,7)$	4	3	4	1,2,3,9
16. a)	Explain the following IC characteristics a) Fan out b) Power dissipation c) Propagation delay d) Noise margin	4	1	1	1,2,3,9
b)	Draw and explain look ahead carry generator.	4	2	2	1,2,3,9
17.	Answer any <i>two</i> of the following:				
a)	Design a 3 bit synchronous down counter with timing diagram.	4	3	2	1,2,3,9
b)	Draw and explain flash type ADC converter.	4	1	3	1,2,3,9
c)	Implement the following functions using PAL. $W = ABC^1 + A^1B^1CD^1$ $X = A + BCD$ $Y = A^1B + CD + B^1D^1$ $Z = W + AC^1D^1 + A^1B^1C^1D$	4	4	4	1,2,3,9

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	40%
iii)	Blooms Taxonomy Level - 3 & 4	40%
