A Reg. No. : | | | | | | | | | | |

Question Paper Code: 54B01

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fourth Semester

Biomedical Engineering

15UBM401-ANALOG AND DIGITAL INTEGRATED CIRCUITS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. If A_{DM} = 3500 and A_{CM} = 0.35, the CMRR is …… CO1 -R

   (a) 1 (b) 0 (c) ∞ (d) 1.5

2. Which one of the following features suited for Instrumentation Amplifier. CO1 -R

   (a) High CMRR (b) High DC offset (c) Low Gain Accuracy (d) High Output

3. A multivibrator is an electronic circuit used to implement CO2 -R

   (a) Oscillator (b) Timer

   (c) Flip-flop (d) All of the Mentioned

4. The _____ Filter controls the capture range and lock range of PLL CO2 -R

   (a) Low Pass (b) High Pass (c) Band Pass (d) Band Reject

5. What is the formula for finding the time period in Monostable operation? CO3- R

   (a) T= 1.1 RC (b) T= 1.5 RC (c) T= 2.1 RC (d) T= 2.5 RC

6. The operating voltage range for NE/SE 565 PLL. CO3 -R

   (a) ± 6V to ± 12V (b) ± 12V to ± 18V (c) ± 4V to ± 12V (d) ± 7V to ± 12V

7. The output of an AND gate with three inputs, A, B, and C, is HIGH when _____. CO4 -U

   (a) A = 1, B = 1, C = 0 (b) A = 0, B = 0, C = 0

   (c) A = 1, B = 1, C = 1 (d) A = 1, B = 0, C = 1

8. Applying DeMorgan's theorem to the expression $\overline{ABC}$, we get _____. CO4 -U

(a) $\overline{A} + \overline{B} + \overline{C}$ (b) $\overline{A + B + C}$ (c) $A + \overline{B} + C\overline{C}$ (d) $A(B + C)$

9. How many flip-flops are in the 7475 IC? CO5 -R

(a) 1 (b) 2 (c) 4 (d) 8

10. The flip-flop is only activated by CO5- R

(a) Positive edge trigger (b) Negative edge trigger

(c) Either positive or Negative edge trigger (d) None of the Mentioned

PART – B (5 x 2= 10Marks)

11. List out the characteristics of OP-Amp Circuits. CO1- R

12. List the types of comparators CO2 -R

13. Calculate output frequency f_0 , Lock range Δf_C of a 565 PLL if $R_T = 10k\Omega$, $C_T = 0.01\ \mu F$ and $C= 10\ \mu F$. CO3 -U

14. What is priority Encoder? CO4- U

15. Classify the different types of PLD. CO5 -R

PART – C (5 x 16= 80Marks)

16. (a) Describe the AC Characteristics of the Operational Amplifier circuits with suitable example. CO1- U (16)

Or

(b) Describe the DC Characteristics of the Operational Amplifier circuits. CO1- U (16)

17. (a) How the square wave is generated when it switches from one sate to other state and explain it. CO2 -U (16)

Or

(b) Draw and explain the types of D/A Converters with suitable waveforms. CO2 -U (16)

18. (a) Describe the operation of Monostable Multivibrator circuit with suitable waveforms. CO3 -U (16)

Or

(b) Draw the block diagram of VCO. Explain the working principle of the VCO with suitable waveforms. CO3- U (16)

19.	(a)	Draw the logic diagram of the full Adder and explain its operation.	CO4- U	(16)
		Or		
	(b)	Simplyfy the following using tabulation method $Y(w,x,y,z)=\Sigma m(1,2,3,5,9,12,14,15)+\Sigma d(4,8,11)$	CO4 -App	(16)
20.	(a)	What is RAM? Explain the different types of RAM in detail.	CO5- U	(16)
		Or		
	(b)	Sketch the transition table and state stable for an asynchronous sequential circuit described by the following Boolean expressions Y1=xy1+x'y2', Y2=xy1'+x'y2	CO5 -U	(16)