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

Question Paper Code: 54305

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

Fourth Semester

Electrical and Electronics Engineering

15UEE405- ANALOG INTEGRATED CIRCUITS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Why oxidation process is required in IC fabrication? CO1- R

   (a) To protect against contamination (b) To use it for fabrication various components

   (c) To prevent diffusion of impurities (d) All of the mentioned

2. Low volume production methods are best suited to hybrid IC technology because CO1- R

   (a) It require stipulated temperature to fabricate a circuit

   (b) It require several steps to fabricate a circuit

   (c) It require large components to fabricate a circuit

   (d) It require various designers to fabricate a circuit

3. In ideal Characteristics of Op-amp the output impedance is …… CO2- R

   (a) Infinity (b) Zero (c) One (d) both a and b

4. The Input Bias Current value for FET is CO2- R

   (a) > 50pA (b) 50pA (c) 500nA (d) <500nA

5. The Filters are also called as …… CO3- R

   (a) Frequency Selective circuit (b) Buffer

   (c) trans-conductance (d) both a and b

6. For instrumentation Amplifier the CMRR & gain accuracy should be CO3- R

(a) High (b)) Low (c) Zero (d) Infinity

7. The output waveform from Schmitt trigger is _____ CO4- R

(a) Square (b) Pulse (c) Triangular (d) Delay pulse

8. In VCO, unwanted oscillations are eliminated by capacitor of Range ____? CO4- R

(a) 0.001µF (b) 0.01µF (c) 1 µF (d) 0.0000 µF

9. What is the dropout voltage in a three terminal IC regulator? CO5- R

(a) $|Vin| \geq |Vo|+2v$ (b) $|Vin| < |Vo|-2v$ (c) $|V\ in| = |Vo|$ (d) $|Vin| \leq |Vo|$

10. A device used to provide a stable DC voltage for powering other electronic devices is _____ CO5- R

(a) Voltage Regulator (b) Oscillators

(c) PLL (d) VCO

PART – B (5 x 2= 10 Marks)

11. List the various type of IC fabrication process. CO1- R

12. Analyze the characteristics of an ideal op-amp. CO2- R

13. Identify why active filters are preferred? CO3- U

14. In the monostable multivibrator R=100Ω and time delay T=100mS. Calculate the value of C CO4- R

15. Explain the various components in PLL.. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Explain briefly about the logic families of digital IC's CO1- U (16)

Or

(b) (i) State the advantages of integrated circuits over discrete components. CO1- U (8)

(ii) Explain the resistor type fabrication used in integrated Circuits. CO1- U (8)

17. (a) Build a circuit using operational amplifier to add several signals and explain its operation in detail. CO2- App (16)

Or

(b) Develop a circuit diagram which reduces the effect of input bias current and input offset current of an operational amplifier. CO2- App (16)

18.	(a)	Define instrumentation amplifier. Give the features of an instrumentation amplifier. Explain the working of a 3 operational amplifier instrumentation amplifier	CO3-U	(16)
		Or		
	(b)	(i) Draw the I/O waveforms for the following (a) Step signal (b) Square signal (c) Sine wave signal	CO3-U	(8)
		(ii) Derive the expression of output voltage for Op-amp	CO3-App	(8)
19.	(a)	Build a circuit with two op-amps, single SR flip-flop and NPN transistor as major elements for generating regular sequence of pulses.	CO4- App	(8)
		Or		
	(b)	Select the appropriate method for having Frequency Divider and Pulse Width Modulator as the applications of Monostable Multivibrator.	CO4- Ana	(16)
20.	(a)	Compare the operational features of Switching Regulators with the Linear Voltage Regulators.	CO5- Ana	(16)
		Or		
	(b)	Construct an integrated Chip, which provides electrical isolation between the input and output circuit by applying the opto electronic principle.	CO5-App	(16)