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**Question Paper Code: 54305**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fourth Semester

Electrical and Electronics Engineering

15UEE405- ANALOG INTEGRATED CIRCUITS

(Regulation 2015)

Duration: 1:15hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

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. Which technology is used to get cheap resistors and capacitors? CO1 -R
  - (a) Thick film technology
  - (b) Thin film technology
  - (c) Thin and thick film technology
  - (d) None of the mentioned
3. Which is not the ideal characteristic of an op-amp? CO2- R
  - (a) Input Resistance  $\rightarrow 0$
  - (b) Output impedance  $\rightarrow 0$
  - (c) Bandwidth  $\rightarrow \infty$
  - (d) Open loop voltage gain  $\rightarrow \infty$
4. Ideal op-amp has infinite voltage gain because CO2 -R
  - (a) To control the output voltage
  - (b) To obtain finite output voltage
  - (c) To receive zero noise output voltage
  - (d) None of the mentioned
5. Calculate the conversion time of a 12-bit counter type ADC with 1MHz CO3- R  
clock frequent to convert a full scale input?
  - (a) 4.095  $\mu$ s
  - (b) 4.095ms
  - (c) 4.095s
  - (d) None of the mentioned

6. Find out the resolution of 8 bit DAC/ADC? CO3- R  
 (a) 562 (b) 625 (c) 256 (d) 256
7. Which characteristic of PLL is defined as the range of frequencies over which PLL can acquire lock with the input signal? CO4- R  
 (a) Free-running state (b) Pull-in time  
 (c) Lock-in range (d) Capture range
8. According to transfer characteristics of PLL, the phase error between VCO output & incoming signal must be maintained between \_\_\_\_\_ in order to maintain a lock. CO4- R  
 (a)  $0 & \pi$  (b)  $0 & \pi/2$  (c)  $0 & 2\pi$  (d)  $\pi & 2\pi$
9. What is the dropout voltage in a three terminal IC regulator? CO5- R  
 (a)  $|V_{in}| \geq |V_o| + 2v$  (b)  $|V_{in}| < |V_o| - 2v$  (c)  $|V_{in}| = |V_o|$  (d)  $|V_{in}| \leq |V_o|$
10. Switching regulators are series type regulators, which has \_\_\_\_\_ power dissipation & \_\_\_\_\_ efficiency. CO5- R  
 (a) increased, increased (b) increased, reduced  
 (c) reduced, increased (d) reduced, reduced

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Explain briefly about the logic families of digital IC's. CO1-App (8)
12. Draw the circuit diagram of op-amp differentiator, integrator and derive an expression for the output in terms of the input. CO2 -App (8)
13. Explain the working of an instrumentation amplifier with a circuit. Give its characteristics and applications. CO3- Ana (8)
14. Draw the block diagram of an Astable multivibrator using 555 timer and derive an expression for its frequency of oscillation. CO4 -U (8)
15. Explain in detail about the LM 380 power amplifier. CO5- U (8)