Chettinad College of Engineering & Technology
Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department of Electrical and Electronics Engineering

EE8451-Linear Integrated Circuits & Applications

Unit III - MCQ Bank

1. Strain gage is an example of which device?

A) Transducer

B) Voltage Follower

C) Integrator

D) Differentiator

Answer: (A)

2. In an instrumentation amplifier using transducer bridge, which device measure the change in physical energy

A) Resistive Transducer

B) Indicating Meter

C) Capacitive Transducer

D) Inductor Circuit

Answer: (A)

3. General purpose op-amps are used in applications as

A) Instrumentation Amplifier

B) Differential Instrumentation Amplifier

C) Inverting Instrumentation Amplifier

D) Non-inverting instrumentation amplifier

Answer: (B)

4. 4. Consider a thermistor having the following specifications: R_F=150kΩ at a reference temperature of 35^{o}C and temperature coefficient of resistance = 25^{o}C. Determine the change in resistance at

100^{o}C.

A) -1.625MΩ

B) 9.75MΩ

C) 4.78MΩ

D) None of the mentioned

Answer: (A)

5. Express the equation for transducer bridge, if all the resistor values are equal

A) $v=-(\Delta r \times v_{dc})/(2\times r+\Delta r)$

B) $v=-(\Delta r \times v_{dc})/2\times(r+\Delta r)$

C) $v=-v_{dc}/[2\times(2\times r+\Delta r)]$.

D) $v=-(\Delta R \times V_{dc})/ [2\times(2\times R+\Delta R)]$.

Answer: (D)

6. Which material is used for photoconductive cells?

A) Germanium

B) Cadmium Sulphide

C) Lithium

D) Phosphorous

Answer: (B)

7. How a differential instrumentation amplifier using transducer bridge can be used as a temperature controller?

A) Increase Room Temperature

B) Replaces Calibrated Meter With Relay

C) Change The Bridge Resistance

D) Replace Thermistor By Light Intensity Meter

Answer: (B)

8. Which of the following functions does the antilog computation required to perform continuously with log-amps?

A) In(X)

B) Log(X)

C) Sinh(X)

D) All of the mentioned

Answer: (D)

9. 9Find the output voltage of the log-amplifier

A) $V_o = -(Kt)\times Ln(V_i/V_{ref})$

B) $V_o = -(Kt/Q)\times Ln(V_i/V_{ref})$

C) $V_o = -(Kt/Q)\times Ln(V_{ref}/V_i)$

D) $V_o = (kT/q)\times ln(V_i/V_{ref})$

Answer: (B)

10. The input voltage, 6v and reference voltage, 4 v are applied to a log-amp with saturation current and temperature compensation. Find the output voltage of the log-amp?

A) 6.314(Kt/Q)V

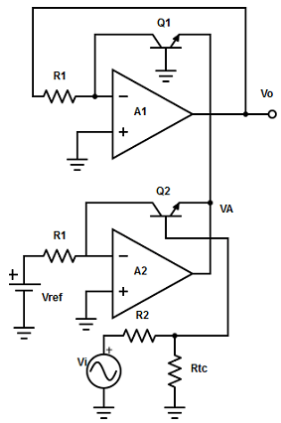
B) 0.597(Kt/Q)V

C) 0.405(Kt/Q)V

D) 1.214(kT/q)v

Answer: (C)

11. Determine the output voltage for the given circuit



A) $V_o = V_{ref}/(10^{-K'v_i})$

B) $V_o = V_{ref}+(10^{-K'v_i})$

C) $V_o = V_{ref}\times(10^{-K'v_i})$

D) $V_o = V_{ref}-(10^{-k'v_i})$

Answer: (C)

12. Determine output voltage of analog multiplier provided with two input signal V_x and V_y.

A) $V_o = (V_x \times V_x) / V_y$

B) $V_o = (V_x \times V_y / V_{ref}$

C) $V_o = (V_y \times V_y) / V_x$

D) $V_o = (V_x \times V_y) / V_{ref}^2$

Answer: (B)

13. An input of Vsinωt is applied to an ideal frequency doubler. Compute its output voltage?

A) $V_o = [(V_x \times V_y) /V_{ref}^2] \times [1-\cos 2\omega t/2]$.

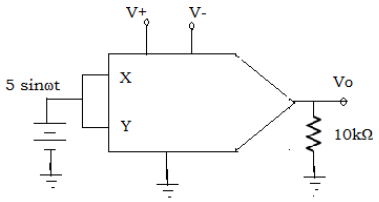
B) $V_o = [(V_x^2 \times V_y^2) /V_{ref}] \times [1-\cos 2\omega t/2]$.

C) $V_o = [(V_x \times V_y)^2 /V_{ref}] \times [1-\cos 2\omega t/2]$.

D) $V_o = [(V_x \times V_y) /(V_{ref}] \times [1-\cos 2\omega t/2]$.

Answer: (D)

14. 14. Find the output voltage for the squarer circuit given below, choose input frequency as 10kHz and V_{ref} =10v



15.

A)$V_o = 5.0-(5.0\times\cos 4\pi\times 10^4 t)$

B) $V_o = 2.75-(2.75\times\cos 4\pi\times 10^4 t)$

C) $V_o = 1.25-(1.25\times\cos 4\pi\times 10^4 t)$

D) None of the mentioned

Answer: (C)

15. Express the output voltage equation of divider circuit

A) $V_o = -(V_{ref}/2)\times(V_z/V_x)$

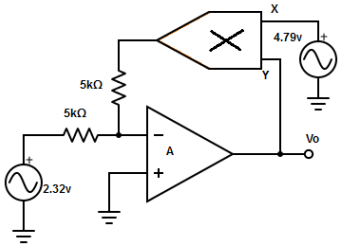
B) $V_o = -(2\times V_{ref})\times(V_z/V_x)$

C) $V_o = -(V_{ref})\times(V_z/V_x)$

D) $V_o = -V_{ref}^2\times(V_z/V_x)$

Answer: (C)

16. Find the input current for the circuit given below.



A) $I_Z = 0.5372mA$

B) $I_Z = 1.581mA$

C) $I_Z = 2.436mA$

D) $I_Z = 9.347mA$

Answer: (B)

17. Which circuit allows to double the frequency?

A) Frequency doubler

B) Square doubler

C) Double multiplier

D) All of the mentioned

Answer: (A)

18. Find the voltage range at which the multiplier can be used as a squarer circuit?

A) $0 - V_{in}$

B) $V_{ref} - V_{in}$

C) 0 – V_{ref}

D) All of the mentioned

Answer: (C)

19. Which circuit can be used to take square root of a signal?

A) Divider circuit

B) Multiplier circuit

C) Squarer circuit

D) None of the mentioned

Answer: (A)

20. A square root circuit build from multiplier is given an input voltage of 11.5v. Find its corresponding output voltage?

A) 11v

B) 15v

C) 13v

D) Cannot be determined

Answer: (D)

21. In a first order high pass filter, frequencies higher than low cut-off frequencies are called

A) Stop band frequency

B) Pass band frequency

C) Centre band frequency

D) None of the mentioned

Answer: (B)

22. Determine the expression for output voltage of first order high pass filter?

A) $V_O = [1+(R_F /R_1)]\times [(j2\pi fRC/(1+j2\pi fRC)] \times V_{in}$

B) $V_O = [-(R_F /R_1)]\times [(j2\pi fRC/(1+j2\pi fRC)] \times V_{in}$

C) $V_O = \{[1+(R_F /R_1)]\times /[1+j2\pi fRC] \}\times V_{in}$

D) None of the mentioned

Answer: (A)

23. The internal resistor of the second order high pass filter is equal to 10kΩ. Find the value of feedback resistor?

A) 6.9KΩ

B) 5.86KΩ

C) 10KΩ

D) 12.56kΩ

Answer: (B)

24. Determine the expression for time period of a square wave generator

A) $T= 2RC \ln\times[(R_1+ R_2) / (R_2)]$.

B) $T= 2RC \ln\times[(2R_1+ R_2) / (R_2)]$.

C) $T= 2RC \ln\times[(R_1+ 2R_2) / (R_2)]$.

D) $T= 2RC \ln\times[(R_1+ R_2) / (2 R_2)]$.

Answer: (B)

25. What will be the frequency of output waveform of a square wave generator if $R_2 = 1.16 R_1$?

A) $f_o = (1/2RC)$

B) $f_o = (\ln/2RC)$

C) $f_o = (\ln /2 \times\sqrt{RC})$

D) $f_o = (\ln/\sqrt{(2 RC)})$

Answer: (B)