LIC ESE MAY 2021 OBJECTIVE

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Objective Questions

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For a Wein Bridge oscillator, the RC networks in the feedback circuit have values of their resistances R = 3.3 kΩ and capacitances C = 0.047 μF,

- (●) Its frequency of oscillation is ≈ 1 kHz
- ( ) Its frequency of oscillation is ≈ 3.030 kHz
- ( ) Its frequency of oscillation is ≈ 3.3 kHz
- ( ) Its frequency of oscillation is ≈ 480 Hz

*

For a Phase Locked Loop which of the following is true?

- (●) Lock in range > Capture range
- ( ) Lock in range < Capture range
- ( ) Lock in range = Capture range
- ( ) Lock in range = half of Capture range

A square waveform having ON time greater than its OFF time is fed as input to an integrator. The resulting output of the integrator is called

- (●) Triangular waveform
- ( ) Sawtooth waveform
- ( ) Inverted Square waveform
- ( ) Sine waveform

Clear selection

*

For High voltage, High current voltage regulator using IC 723, output voltage and output currents respectively have one of the following correct values.

- ( ) Less than 7 V, greater than 150 mA
- (●) Less than 7 V, less than 150 mA
- ( ) 7 to 37 V, greater than 150 mA
- ( ) 7 to 37 V, less than 150 mA

An ideal op-amp requires infinite bandwidth because

- (●) Signals can be amplified without attenuation
- ( ) Output common-mode noise voltage is zero
- ( ) Output voltage occurs simultaneously with input voltage changes
- ( ) Output can drive infinite number of devices

Clear selection

An Inverting Schmitt trigger employs

- ○ Only Negative feedback
- ◉ Only Positive feedback
- ○ Both Negative and Positive feedback
- ○ No feedback

Clear selection

A current to voltage converter converts

- ◉ Input current to proportional output voltage.
- ○ Input current to proportional output current.
- ○ Input voltage to proportional output voltage.
- ○ Input voltage to proportional output current.

Clear selection

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The reference voltage of upper comparator used in functional block diagram of IC 555 is

- ○ 1/5 VCC
- ○ 1/3 VCC
- ◉ 2/3 VCC
- ○ 2/5 VCC

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An integrator circuit

- ○ uses a resistor in its feedback circuit.
- ○ uses an inductor in its feedback circuit.
- ◉ uses a capacitor in its feedback circuit.
- ○ uses a diode in its feedback circuit.

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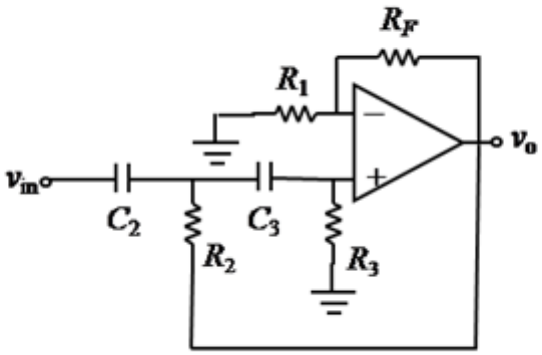
The filter shown below has $R_1 = 27\ k\Omega$, $R_F = 15.8\ k\Omega$, $R_2 = R_3 = 33\ k\Omega$, $C_2 = C_3 = 0.0047\ \mu F$ is a



- ◉ High Pass filter with cut off frequency ≈ 1 kHz
- ○ High Pass filter with cut off frequency ≈ 10 kHz
- ○ Low Pass filter with cut off frequency ≈ 1 kHz
- ○ Low Pass filter with cut off frequency ≈ 10 kHz

The output pulse width of a monostable multivibrator using 555 where R and C are the external components is

- RC
- 1.1 RC
- (2/3) RC
- (1/3) RC

Clear selection

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In an Astable multivibrator if R_A=25KΩ, R_B=33kΩ, C=0.5μF, calculate discharging time of capacitor waveform

- 11.43 ms
- 20 ms
- 12.5 ms
- 10 ms

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Which of these circuits clips one half cycle of a sinusoidal waveform?

- Comparator
- Schmitt Trigger
- Half Wave Precision Rectifier
- Peak detector

In an inverting amplifier using op-amp

- The input is connected to the non-inverting terminal via resistor and inverting terminal is kept floating
- The input is connected to the non-inverting terminal via resistor and inverting terminal is grounded
- The input is connected to the inverting terminal via resistor and non- inverting terminal is kept floating
- **The input is connected to the inverting terminal via resistor and non- inverting terminal is grounded**

Clear selection

For a non inverting comparator, input signal and reference voltage are given to

- inverting terminal of the op-amp through separate resistors
- non-inverting terminal of the op-amp through separate resistors
- inverting terminal and non-inverting terminal of the op-amp respectively
- **non-inverting terminal and inverting terminal of the op-amp respectively**

Clear selection

*

Output voltage of LM317 can be adjusted from

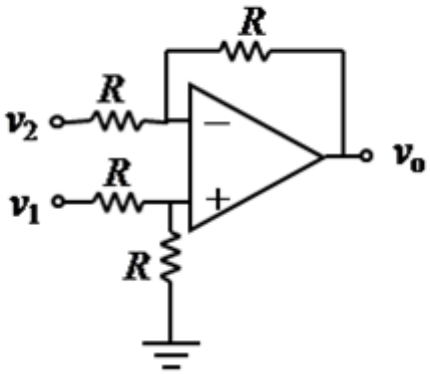
- -1.2 V to 37 V
- -1.2 V to -37 V
- **1.2 V to 37 V**
- 1.2 V to -37 V

*

In IC7805 the output voltage is

- (●) 5 V
- ( ) 0 V
- ( ) 8 V
- ( ) 7 V

For the difference amplifier shown below, the output voltage is given by



- ( ) vo = v1 + v2
- ( ) vo = v1 - v2
- (●) vo = - v1 + v2
- ( ) vo = - (v1 + v2)

Clear selection

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Which one of these ICs is a Voltage Controlled Oscillator?

- ○ IC 565
- ◉ IC 566
- ○ IC 555
- ○ IC 723

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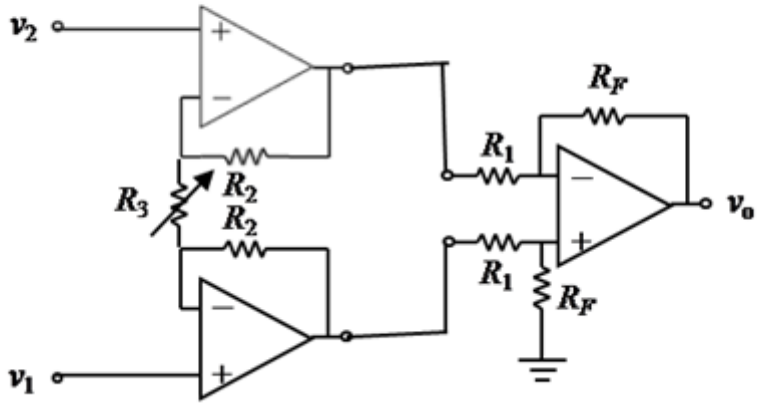
The instrumentation amplifier shown in diagram has $R_1 = R_F = 25\ k\Omega$, $R_2 = 10\ k\Omega$, and R_3 varying from 100 Ω to 1 kΩ, the voltage gain of the amplifier varies from



- ○ 10 to 100
- ◉ 21 to 201
- ○ 1 to 101
- ○ 2 to 202

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