

- Q)The following statement about an RC HPF is not correct--> **The gain attains unity at $f=\infty$**
- Q)As the time constant of RC HPF increases the amount of tilt is--> **b) Decreases**
- Q)In a high Pass RC circuit, the output (V_o) is taken across--> **Resistor**
- Q)The voltage across a capacitor can change instantaneously provided--> **An infinite current flows through it**
- Q)The response of a high pass RC circuit to a step input of amplitude V is--> **$Ve^{-t/RC}$**
- Q)A square wave form is transmitted through an RC HPF, and we find--> **The flat portion of the waveform is effected**
- Q)At very low frequencies the capacitor acts as a--> **Open circuit**
- Q)The average value of output of an RC HPF is always equal to--> **Zero**
- Q)The response of a low-pass RC circuit to a step input is--> **exponential rise**
- Q)The expression for transmission error (e_t), when ramp input is applied to a Low pass RC circuit for the condition $RC \ll T$ is--> **$4RC / T$**
- Q)The lower cutoff frequency of a low-pass RC circuit is--> **Zero**
- Q)Time required for V_o to reach 10% of the final value is given by--> **$0.1RC$**
- Q)The average value of output of an RC LPF is always equal to--> **The average value of input**
- Q)Which circuit converts square waveform to triangular waveform--> **Integrator**
- Q)The expression for transmission error (e_t), when ramp input is applied to a High pass RC circuit for the condition $RC \gg T$ is--> **$T / 2RC$**
- Q)The process of converting pulses into pips by means of circuit of short time constant is called--> **Peaking**
- Q)A High pass RC circuit acts like a differentiator for the condition($RC =$ Time constant of the circuit & $T =$ Time period of the input signal)--> **$RC \ll T$**
- Q)A square wave of peak to peak amplitude of 20V is passed through a good differentiator. The peak to peak amplitude of the output is--> **Nearly 40V**
- Q)The response of a differentiator circuit to a pulse input is--> **spikes**
- Q)An RC integrator and an RC differentiator can act as what types of filters, respectively?--> **low-pass, high-pass**
- Q)A step signal is applied to a cascade of two circuits with rise times $t_{r1}=1s$ and $t_{r2}=2s$, the rise time of the output is--> **2.348s**
- Q)If the capacitor in an RC integrator shorts, the output--> **is at ground**
- Q)The rise time of the output of a low-pass RC circuit is given by--> **$2.2 RC$**
- Q)A 10V step is applied to a RC low-pass circuit with $R=100K\Omega$ and $C=100pF$. The time for the capacitor to charge to 63.2% of final value is--> **10s**
- Q)A low pass RC circuit acts like an integrator for the condition--> **$RC \gg T$**
- Q)The response of an integrator circuit to a square wave input is--> **triangular wave**
- Q)The condition for perfect compensation in an attenuator is--> **$C_1=R_2C_2 / R_1$**
- Q)Attenuator is used to--> **Reduce the amplitude of a signal**
- Q)Integrators are mostly preferred over differentiators because as frequency increases, the gain of an integrator--> **Decreases**
- Q)It is easier to stabilize _____ than _____ with respect to spurious oscillations--> **An integrator, a differentiator**
- Q)For perfect differentiation, the phase shift between the input and output must be--> **90°**
- Q)For a high pass circuit to acts as a differentiator, ωRC must be less than equal to--> **0.01**

Q) Attenuators are compensated so that the attenuation--> **independent of frequency**

Q) In a repetitive-pulse RC integrator circuit, what would the steady-state voltage equal at the end of the fifth pulse? Assume a V_{in} of 20 V.--> **14.62 V**

Q) A symmetrical square wave of 1 KHz is applied to a high-pass circuit with $R=5K\Omega$ and $C=1F$. The percentage tilt of the output is--> **10 %**

Q) The higher cutoff frequency of a high-pass RC circuit is--> **∞**

Q) In an attenuator, the final output voltage is determined by--> **resistor**

Q) An attenuator is said to be over compensated if--> **$R_1C_1 > R_2C_2$**

Q) An attenuator has $R_1=2M\Omega$, $R_2=3M\Omega$. Its attenuation factor is--> **1.5**

Q) In an attenuator, the initial output voltage is determined by--> **Capacitor**

Q) To obtain a pulse from a step voltage, the RLC circuit should operate in the neighbourhood of--> **Critical damping**

Q) The quality factor Q of a circuit, which is to ring for N number of cycles before the amplitude reduces to $1/e$ of its initial value is given by $Q=$ --> **πN**

Q) RL circuits are rarely used when a _____ time constant is required--> **Large**

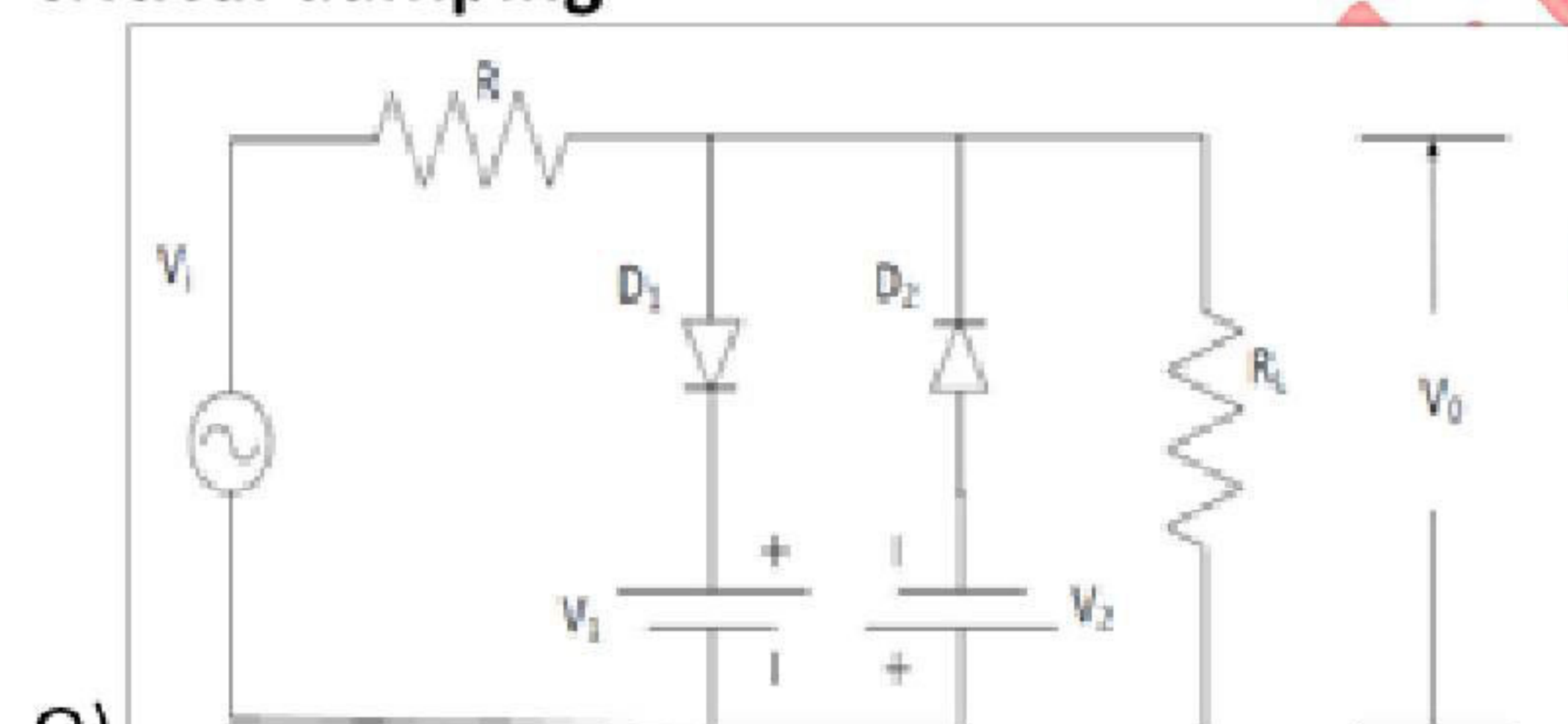
Q) When a pulse is transmitted through a low-pass circuit, its shape is preserved if the 3-dB frequency is--> **Approximately equal to the reciprocal of the pulse width**

Q) The condition for a RLC circuit to ring for many cycles is (k is damping constant)--> **$k < 1$**

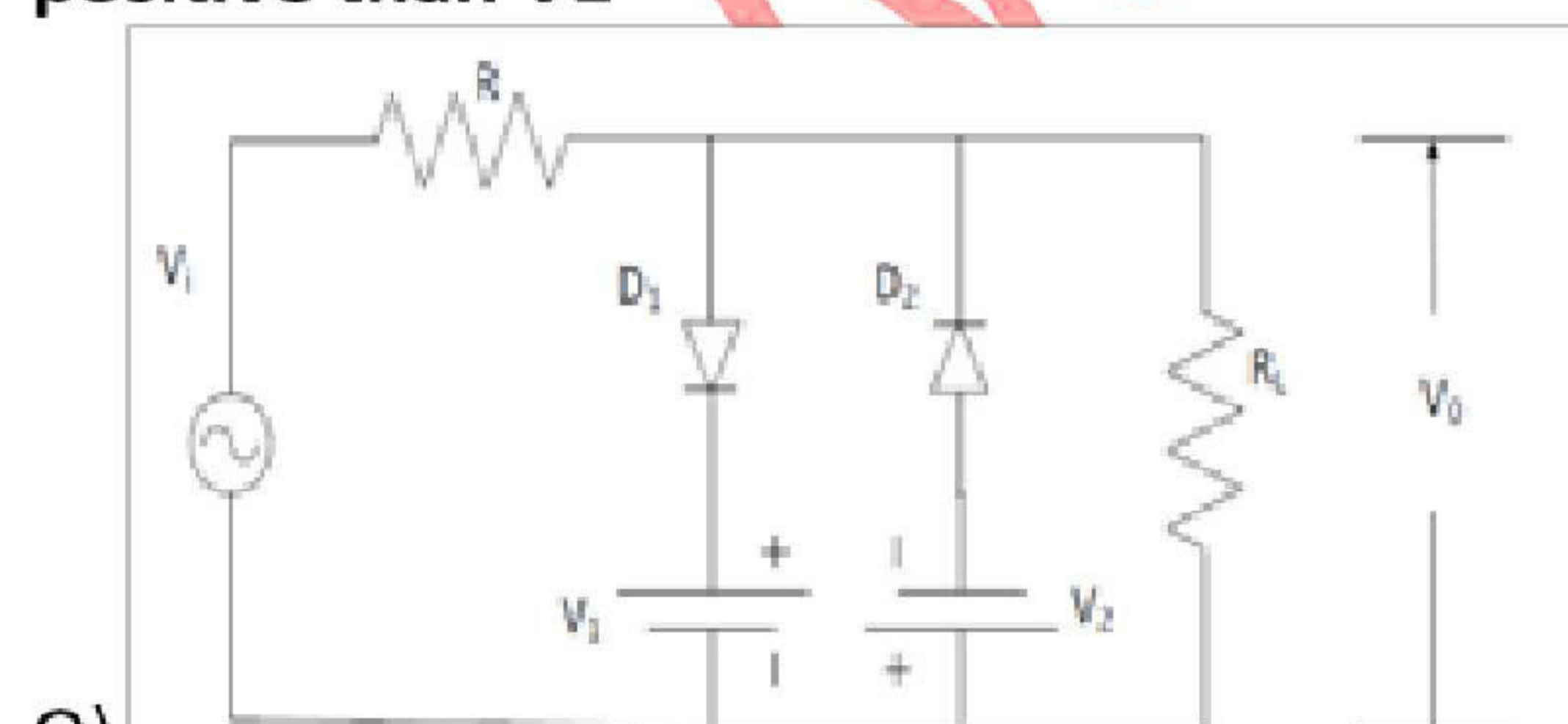
Q) A circuit with $Q=16$ will ring for--> **5 cycles**

Q) The time constant of a series RL circuit is--> **L/R**

Q) The response of a RLC circuit to a step input for damping constant $k = 1$, corresponds to--> **critical damping**



Q) In the above figure D_1 turns on when--> V_i is more positive than V_1



Q) In the given Figure D_2 turns on when--> V_i is more negative than V_2

Q) In a _____, when the diode is OFF, the output follows the input--> **shunt diode clipper**

Q) A transistor has--> **two nonlinearities**

Q) Clipping circuits are used to--> **remove a part of the signals**

Q) What type of diode circuit is used to clip off portions of signal voltages above or below certain levels?--> **clipper or limiter**

Q)The capacitive coupling network is a--> **high pass filter**

Q)The process whereby the form of a non-sinusoidal signal is altered by transmission through a linear network is called--> **linear wave shaping**

Q)A circuit that adds positive or negative dc voltage to an input sine wave is called--> **clammer**

Q)Consider the following statements: A clamper circuit 1. adds or subtracts a dc voltage to a waveform 2. does not change the waveform 3. amplifies the waveform Which are correct?--> **1, 2**

Q)The negative clamper is also called--> **The positive peak clamper**

Q)The clamping theorem states that--> **$A_f/A_r = R_f/R$**

Q)If the transistor is indeed in saturation, the following condition must be satisfied--> **$i_B > i_c/h_{fe}(\min)$**

Q)Clipping circuits are also referred to as--> **slicers**

Q)A diode shunt clipper is required to clip off the input which is exactly above 4.6v. The diode has $V_\gamma = 0.6v$. The value of reference voltage (V_R) must be--> **4V**

Q)When the emitters of two identical transistors are coupled, we get--> **double ended clipper**

Q)The circuit which converts sinusoidal wave form into square under some special condition is--> **Clammer**

Q)The disadvantage of shunt clipper--> **Round shaped edges of input waveform**

Q)A voltage doubler circuit is fed by a voltage $V_m \sin \omega t$. The output voltage will be nearly $2 V_m$ only if--> **load resistance is large**

Q)A comparator is a basic building block in a system used to analyze the ----- distribution of noise generated in active device--> **Amplitude**

Q)Clamping circuits are used to--> **Fix the extremity of the waveform at some level**

Q)A circuit which clamps the negative peak of a 10V sinusoidal signal to +3V level is called--> **Biased positive clamping circuit**

Q)In positive clamping, the entire input waveform appears--> **Above reference level**

Q)In clamping Circuits the capacitors are--> **Essential**

Q)An example of a non generative feedback comparator is a----- --> **Clipping circuits**

Q)In clipping circuits, the capacitors are--> **unavoidable**

Q)A Clipping circuit will not consist of the following element--> **Capacitors**

Q)In the break region of a clipping circuit the diode behaves as an--> **Neither fully ON nor fully OFF**

Q)The circuit which is used to mark the instant when an arbitrary waveform attains some reference level is called--> **comparator**

Q)Regenerative comparators employ----- feedback--> **Positive feedback**

Q)The application of voltage comparator--> **phase meter**

Q)Regenerative comparators are--> **Schmitt trigger**

Q)The clamping circuit theorem is specifically based on the following principle--> **Charge gained in the forward interval is equal to the charge lost in the reverse interval under steady-state conditions**

Q)The dc component inserted by the diode clamping circuit in its input is--> **Need not be equal to the dc component lost by input prior to clamping**

Q)In the transistor clipping circuit, the transistor is operated in its--> **either in cutoff or saturation region or in both regions**

Q)It is difficult to clamp the following waveform in the diode clamping circuit--> **A train of narrow pulses**

Q)Transfer characteristics is--> **a graph of input voltage and output voltage**

Q)A double peak limiting circuit employs--> **Two zener diodes**

Q)What is the effect of the diode capacitance on the output in a parallel diode clipping circuit?--> **Sharp edges of the input waveform are rounded off**

Q)Application of parallel-diode noise clipping circuit--> **Removes the noisy portions at the positive and negative peaks of the input waveform**

Q)In a multi diode circuit containing n diode the following statement is not correct:--> **The circuit has n realizable states**

Q)Emitter coupled transistor clipping circuit is employed--> **For clipping both extremities of the input waveform**

Q)The attenuation introduced by a diode clamping circuit can be clearly observed by watching the output of the circuit due to a--> **Ramp waveform**

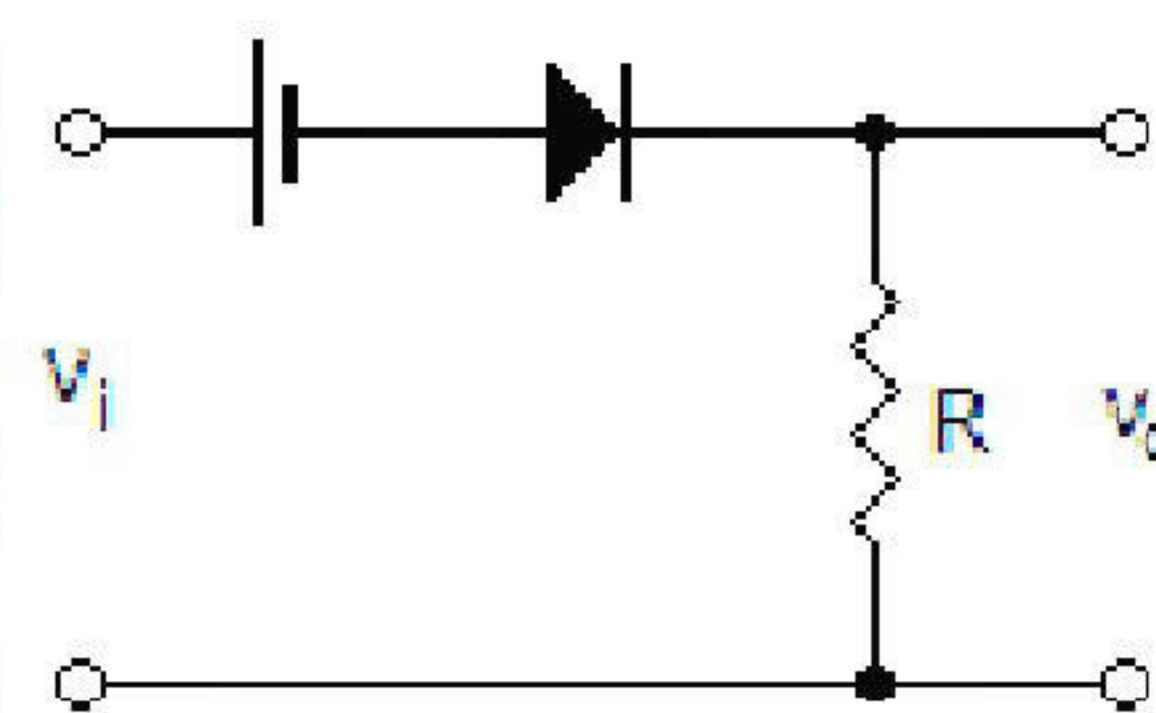
Q)In a diode clamping when the source resistance R_s is equal to zero, the consequence--> **The magnitude of discontinuity in the output is always equal to magnitude of discontinuity in the input**

Q)The transient response of a diode clamping circuit can be conveniently studied by feeding a--> **A square wave input**

Q)In a diode clamping circuit with resistor R across the diode, the purpose of R is--> **To provide a discharge path when input amplitude decreases**

Q)A voltage tripler circuit uses--> **3 diodes and 3 capacitors**

Q)The following device can be treated as self activated switch--> **Diode**

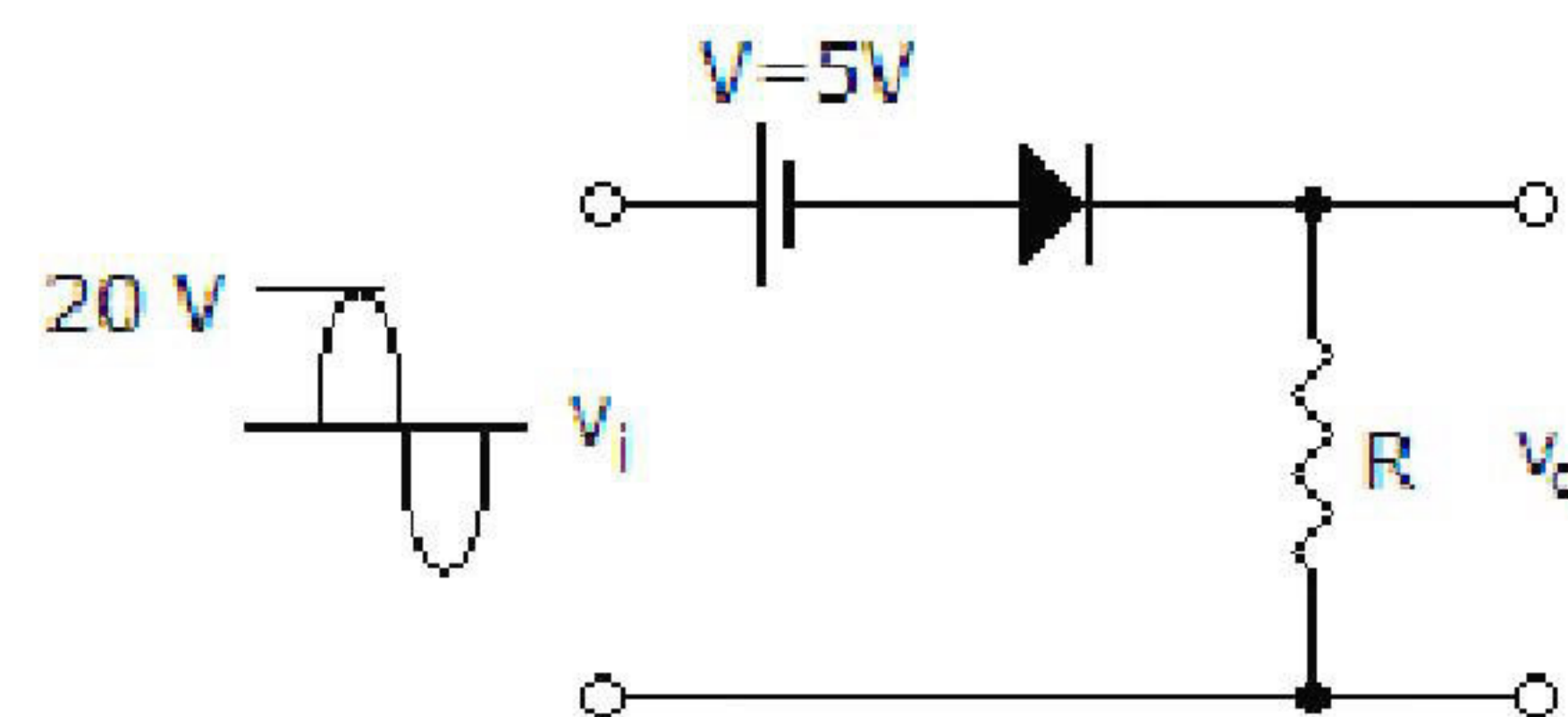


Q)What best describes the circuit?

--> **Clipper**

Q)The external resistance R in a series or shunt clipper is given by--> $R = \sqrt{R_r X R_f}$

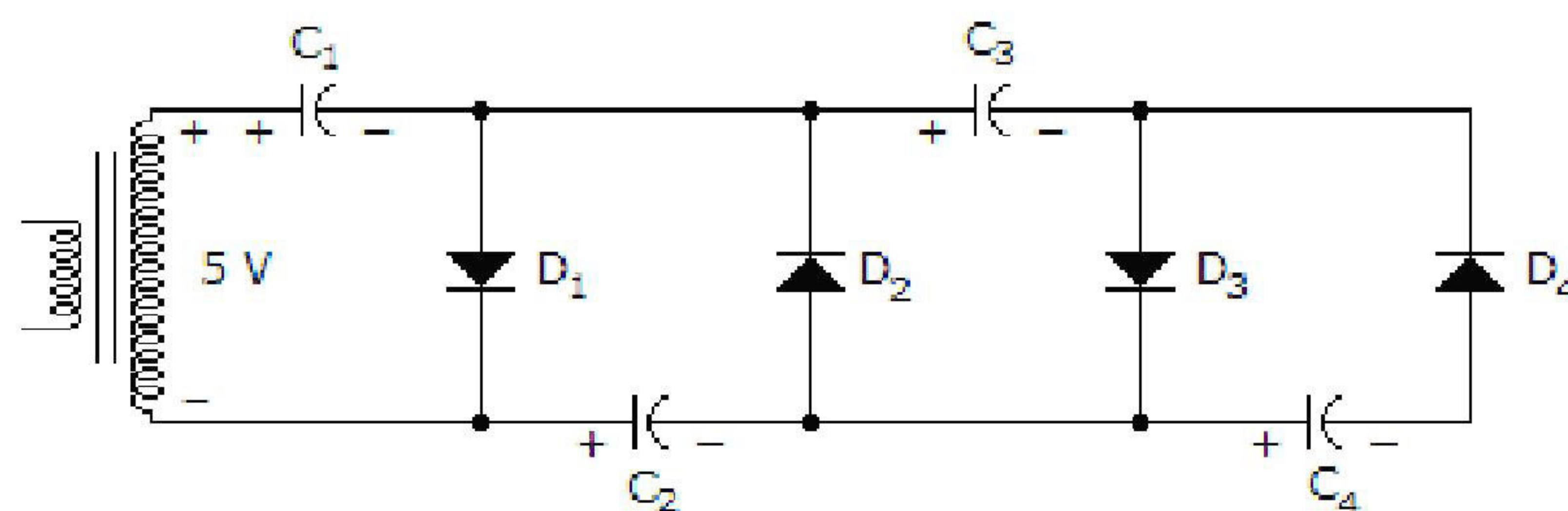
Q)zener diode has ----- temperature coefficient--> **Only NEGATIVE**



Q)Determine the peak value of the output waveform.

15V

Q)What is the voltage measured from the negative terminal of C_4 to the negative terminal of the



transformer?

--> -20V

Q)A semiconductor switch can be treated as--> **Self activated switch**

Q)Reverse saturation current of diode I_o can be measured--> **With an ammeter with large internal resistance**

Q)A dynamic resistance of a diode is defined as--> $R_d = \frac{\Delta V}{\Delta I}$

Q)Transition capacitance of diode is given as--> **b) $\lambda/(V^n)$**

Q)In the diode the time required for minority charge carriers to move into the other side of the PN junction and become majority charge carrier is called--> **Storage time**

Q)which of the following is the fastest switching device--> **BJT**

Q)The capacitance which appears across a reverse biased junction of a diode is called-->

Transition capacitance

Q)A transistor switch with an inductive load functions more like an--> **Differentiator**

Q)Smallest times between two successive triggers is ----- --> **Restoring time**

Q)The $V_{ce(sat)}$ of Si n-p-n transistor at $27^\circ C$ is--> **0.3 v**

Q)The following device is not a controlled switch--> **Diode**

Q)For an ideal p-n junction diode the current $I = I_o (e^{V/\eta V_t} - 1)$ then what is the value η for Ge--> **1**

Q)Turn off time of the transistor is--> **$t_{off} = t_{on} + t_s$**

Q)The V_{ce} of the n-p-n transistor is--> **0.1v**

Q)A large signal approximation which often leads to a sufficient accurate solution is the ----- representation--> **Piecewise linear**

Q)At constant base and collector current forward B-E voltage has typical temperature sensitivity in the range of--> **-1.5 V /c to -2. m V /c**

Q)If the VCB of n-p-n transistor in CE configuration is negative when the transistor is in-->

Saturation region

Q)When does the transistor act as a closed switch--> **both junctions are forward biased**

Q)When does the transistor act as open switch--> **both junctions are reverse biased**

Q)In a transistor leakage current mainly depends on--> **temperature**

Q)The maximum reverse biasing voltage which may be applied before breakdown between collector and base terminals is--> **BV_{CBO}**

Q)A transistor in CE configuration is said to be in cut-off when--> **$V_{ce} < V_{cc}$**

Q)The minority carrier concentration at the p-n junction are computed by making use of the--> **law of the junction**

Q)The gain of a transistor switch is--> **Not defined**

Q)The base width in a junction transistor is deliberately chosen small so that--> **to reduce the recombination of injected minority carriers**

Q)A transistor switch with capacitive load functions more like an--> **Integrator**

- Q)A transistor cannot function as a switch when it is in--> **Active region**
- Q)A clamping diode is used in a transistor switch to--> **Limit collector voltage V_{ce}**
- Q)The time which elapses between the instant when the stored minority charge becomes zero and the time when the diode has nominally recovered is called--> **b)Transition time**
- Q)The time required for the stored minority charge to become zero after the application of the reverse voltage is called--> **Storage time**
- Q)The h_{FE} of a transistor _____ with temperature--> **b)Decreases**
- Q)In charge control model of a semiconductor diode, the diode operation is offered employing the--> **minority carrier concentration across the diode**
- Q)In a semiconductor material, electrons are dislodged from their covalent bonds--> **Due to raise in temperature**
- Q)Diodes which are designed with adequate power dissipation capabilities to operate in the breakdown region may be employed as--> **voltage reference**
- Q)In fast switching circuits _____ must be kept small--> **Load resistor**
- Q)Name the logic family which can always be Wire-Or-ed--> **DTL**
- Q)The fastest logic family is--> **ECL**
- Q)The ECL can be used to switch frequencies as high as--> **500MHz**
- Q)The sum of the delay time and rise time is called--> **b) Turn ON**
- Q)The sum of the storage time and the fall time of a transistor is called the--> **Turn OFF**
- Q)Differential signals are used in the following logic family--> **TTL**
- Q)Complementary output is available in which of the following logic families--> **ECL**
- Q)The number of inputs the gate is designed to handle is called--> **fan-in**
- Q)The logic family which has highest noise margin--> **d)CMOS**
- Q)The logic family with both logic levels negative is--> **ECL**
- Q)The TTL circuit acts as a current source in the--> **b)high state**
- Q)Which of the following logic family is called TRISTATE gate--> **TTL**
- Q)The cost of Schottky clamped TTL is--> **average**
- Q)Fan-in for a TTL gate is given by--> **8**