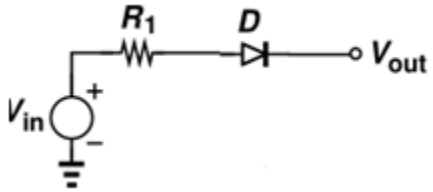
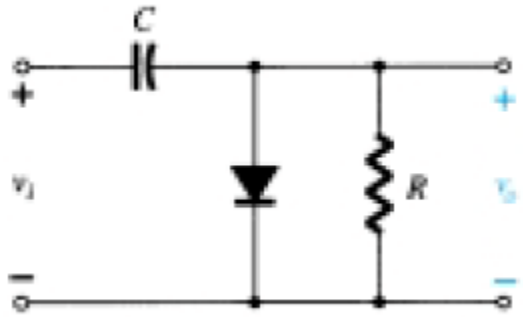
Assignment-1

Q1. An alternating voltage of 360 V, 50 Hz is applied to a full-wave rectifier. The internal resistance of each diode is 100 W. If R_L = 5 kW, then what is the peak value of output current?

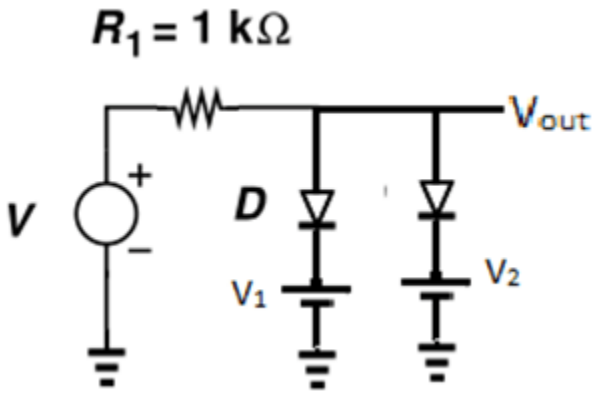
Q2.For a circuit given below, what will be the output if input signal is a sine wave shown below.
(Use ideal diode model of diode)



Q3. For the given circuit, what is the minimum peak value of the output waveform if the input waveform is 10V square wave with switching time of 1 second?
Assume that the input switches between +10V and -10V DC levels.



Q4. Describe output V_{out} of the circuit given below?
(The voltage V_1 is 1V, V_2 is 1V and input to the circuit V is 5sint. Assume both diodes are identical. Use constant voltage drop model for diode and take cut-in voltage as 0.7V)



Q5. In the given circuit input voltage Vin is 3V and V_2 is 1V. The resistance R_1 is 1.5K. Cut-in voltage of diode is 0.5V. Forward bias resistance is 10Ω. The current I will be

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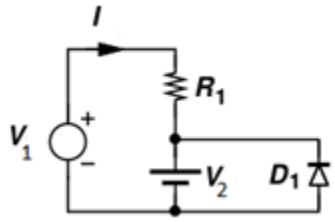
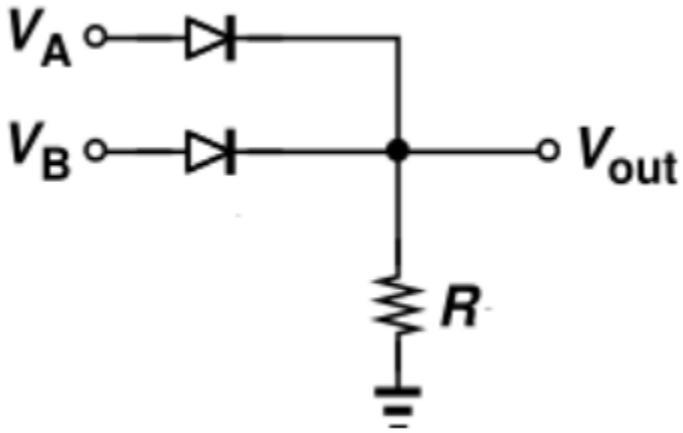


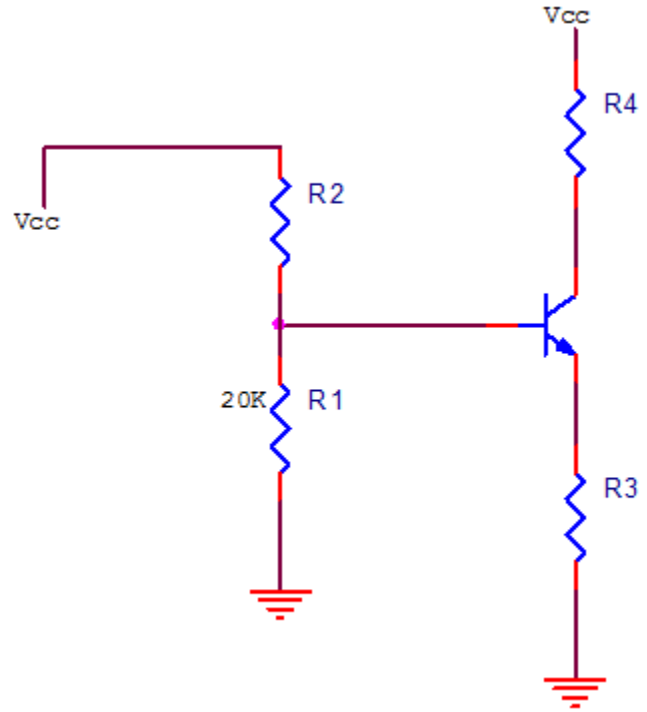
Q6. Explain the advantages of Bridge rectifier over Centre Tap Rectifier.

Q7. . Find the voltage across the resistor R if VA = -3V and V_B = -5V. Use ideal diode model assumption.

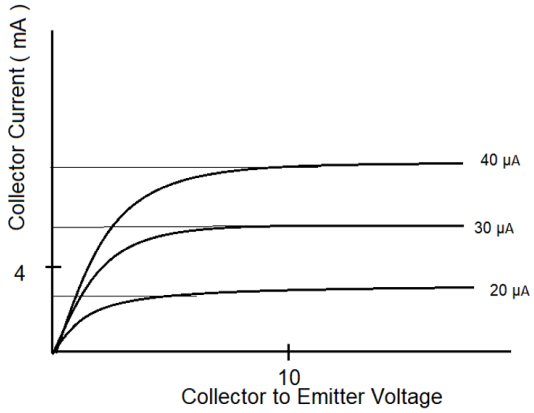


Assignment -2

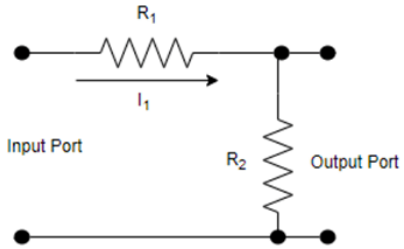
Q1. Consider the biasing circuit shown. The β for the circuit is large. R3 = 1kΩ, R4 = 2kΩ. The stability factor varies between 10 and 11. Find the maximum and minimum values of R2.



Q2. From the figure, what is β_{ac} when V_{CE} is 10V and I_c is 4 mA?



Q3. In the 2 – port network given below, if $R_1 = R_2 = 10k\Omega$. What is the value of the hybrid parameter h_{11}?



Q4. Why is FET is known as unipolar device ?

Q5. Compare Depletion-MOSFET & Enhancement-MOSFET.

Q6. Draw the drain characteristics of JFET & mark the regions of operation.

Assignment -3

Q1. Why direct coupling is not suitable for amplification of high frequency?

Q2. Effect of multistage amplifiers on bandwidth.

Q3. Analyze Two stage RC coupled amplifier with neat diagrams.

Q4. With neat diagram explain cascode amplifier and derive the overall voltage gain of cascode amplifier.

Q5. An amplifier consists of 3 identical stages in cascade, the bandwidth of overall amplifier extends from 20 Hz to 20 kHz. Calculate the bandwidth of individual stage.

Q6. For the circuit shown in Fig. Calculate Ri, Ai, AV and Ro. hie=1.1k, hfe=50, hoe = 25μA/V and hre = 2.5 x 10-4.

Q7.Draw the block diagram of n-stage cascaded amplifier and analyze its various parameters.

Assignment -4

Q1. Derive the expressions of input and output resistances for Voltage Series Feedback Amplifier.

Q2. State Barkhausen Criterion for oscillations. Explain the principle of operation of oscillator..

Q3. With neat diagram, explain Hartley Oscillator and derive the expression for frequency of oscillation..

Q4. Explain the concept of stability of Oscillators.

b) In the Hartley oscillator, L2 = 0.4mH and C = 0.004 μF. If the frequency of the oscillator is 120 kHz, find the value of L1. Neglect the mutual inductance.

Q5. A voltage series negative feedback amplifier has a voltage gain without feedback of A = 500, input resistance Ri = 3kΩ, output resistance R0 = 20kΩ and feedback ratio β = 0.01. Calculate the voltage gain Af, input resistance Rif, and output resistance Rof of the amplifier with feedback.

Q6. Explain the characteristics of negative feedback amplifiers.