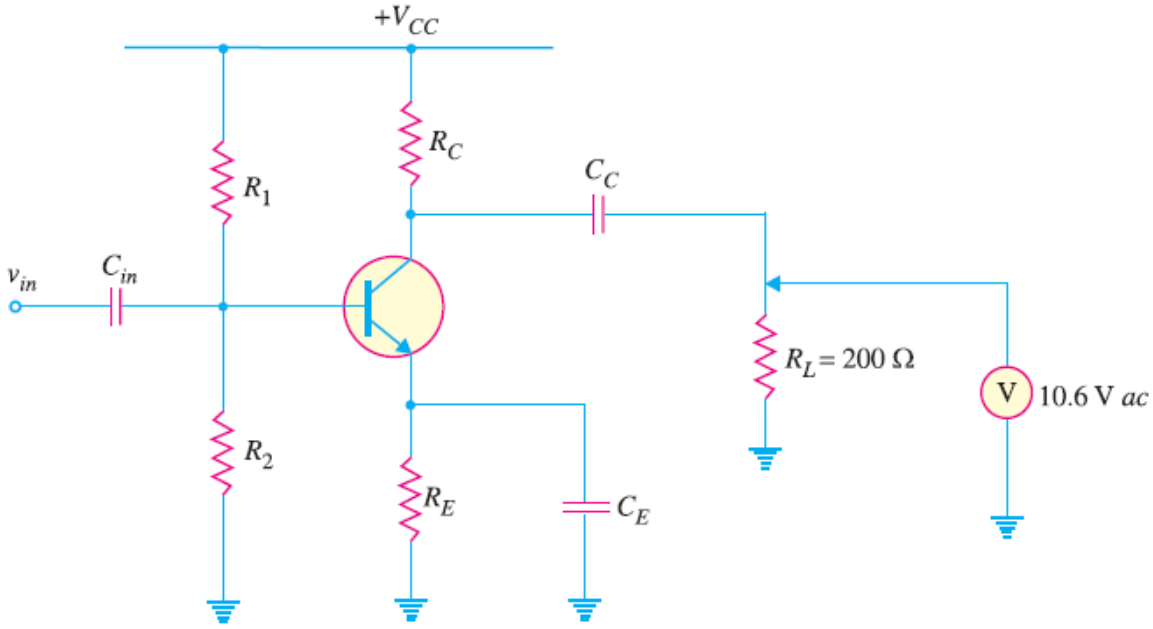
Work Sheet-1

Solve the Given

1. Determine the Output a.c power delivered to the load for the circuit given below.



2. In a Class A power amplifier, the a.c. voltage across load R_L (= 100 Ω) has a peak- to-peak value of 18V. Find the maximum possible a.c. load power.
3. A Class A power amplifier operated from 12V battery gives an output of 2W. Find the maximum collector current in the circuit.
4. A Class A power amplifier supplies 50 W to an 8-ohm speaker. Find (i) a.c. output voltage (ii) a.c. output current.
5. A class A power amplifier has a transformer as the load. If the transformer has a turn ratio of 10 and the secondary load is 100 Ω, find the maximum a.c. power output. Given that zero signal collector current is 100 mA.
6. For a class B amplifier using a supply of VCC = 12V and driving a load of 8Ω, determine (i) maximum load power (ii) d.c. input power (iii) collector efficiency.

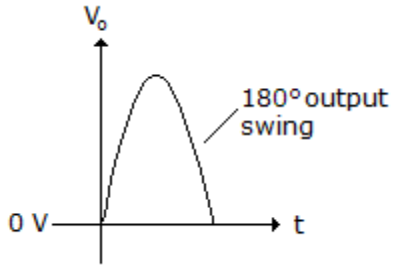
7. A class B amplifier has an efficiency of 60% and each transistor has a rating of 2.5W. Find the a.c. output power and d.c. input power.

Say TRUE or FALSE

1. In a class B push-pull amplifier, crossover distortion occurs when both transistors are off and the input signal voltage must exceed V_{BE} before a transistor conducts.
2. Class A amplifiers operate in the active region of the load line all of the time.
3. The efficiency of any amplifier is the ratio of signal output power to signal input power.
4. A class A amplifier conducts 180° of the cycle.
5. Class B amplifiers are usually zero-biased.
6. Class B amplifiers are usually operated in push-pull to obtain an output that is a near replica of the input signal.
7. Class B operation is provided when the dc bias leaves the transistor biased just off, the transistor turning on when the ac signal is applied.

Fill in the Blanks

1. This is an example of the output swing for a class _____ amplifier.



2. The maximum efficiency of a class A circuit with a direct or series-fed load connection is_____.
3. The Q-point is at cut-off for class _____ operation.
4. The Q-point is at middle of the load line for class _____ operation.

5. How many transistors must be used in a class B power amplifier to obtain the output for the full cycle of the signal?
6. What transformer turns ratio is required to match an 8-Ω speaker load so that the effective load resistance seen at the primary is 12.8 kΩ?
7. In class B power amplifiers, the output signal varies for _____ of the input cycle.
8. _____ amplifiers have the highest overall efficiency.
9. In _____ power amplifiers, the output signal varies for a full 360º of the cycle.