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EE 333

Homework 6.7 MATLAB

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HW6.7 MATLAB

Consider the common emitter BJT amplifier shown below with beta = 100. Assume all capacitors can be treated as short circuits at the frequency of the source Vs.

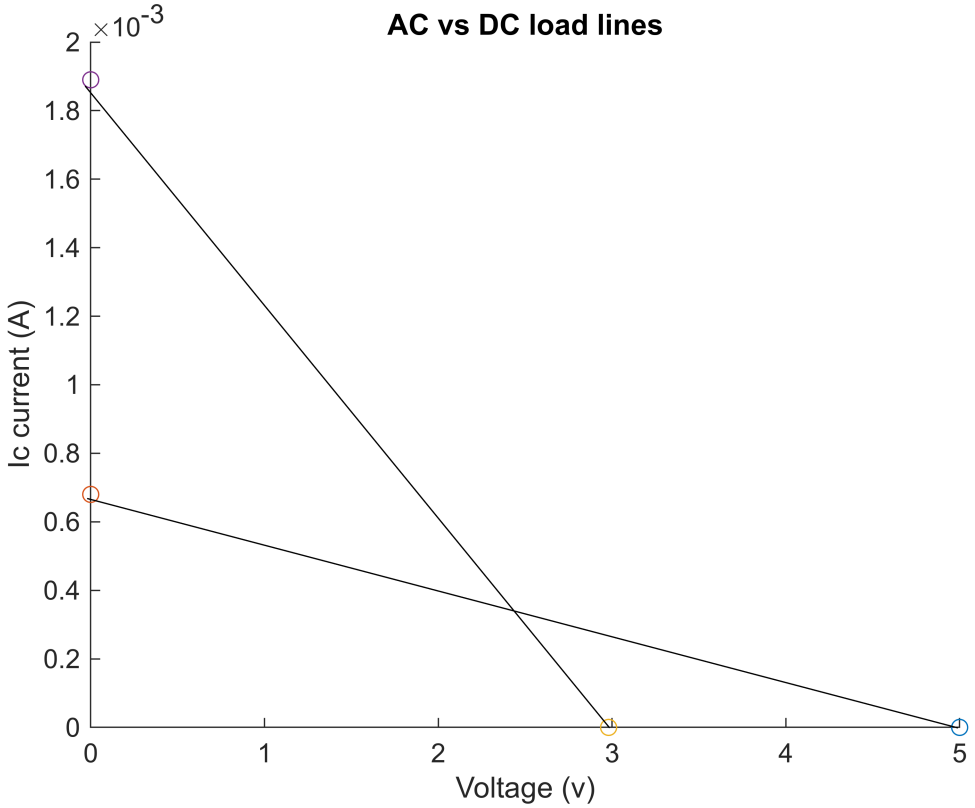
1.Draw the DC equivalent circuit and calculate the DC bias point (Icq and Vceq).

2. Draw the AC equivalent circuit and calculate the small signal voltage gain (V0/Vs).

Note that part 1 and part 2 (a and b) are contained in my hand calculations for this assignment.

3.Create a MATLAB program to plot the DC and AC load lines on the same graph (i.e. to scale).

```
%DC load line
xint = 5;
yint = 0.68e-3;

%AC load line:
xintA = 2.98;
yintA = 1.89e-3;



hold on
plot (xint, 0, "o",0, yint, "o" );
%This annotation should display
annotation("line", [0.1268 0.9036], [0.3823 0.1095])

plot (xintA, 0, "o",0, yintA, "o" );
%this annotation should display the AC load line
annotation("line", [0.125 0.5929], [0.8728 0.1095])

title ("AC vs DC load lines")
xlabel("Voltage (v)")
ylabel("Ic current (A)")
```


AC vs DC load lines
×10^-3
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Ic current (A)
0
1
2
3
4
5
Voltage (v)