

Marks

QUESTION 6 (16 Marks)

The transistor in the circuit shown in Figure 8 is made of silicon with a current gain of 200. Assume there is a voltage of 0.6 volts across the base-emitter junction when this junction is forward biased.

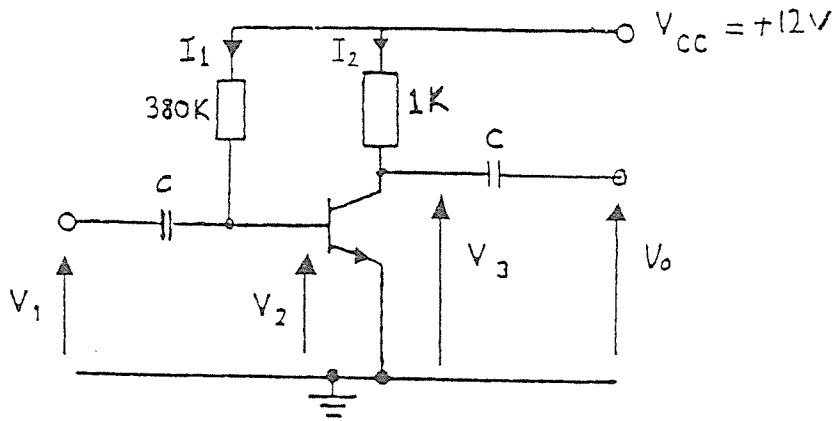


Figure 8.

(a) Calculate:

2 (i) Current I_1

$I_1 = \underline{\hspace{2cm}}$ (/ 2)

2 (ii) Current I_2

$I_2 = \underline{\hspace{2cm}}$ (/ 2)

2 (iii) Voltage V_3

$V_3 = \underline{\hspace{2cm}}$ (/ 2)

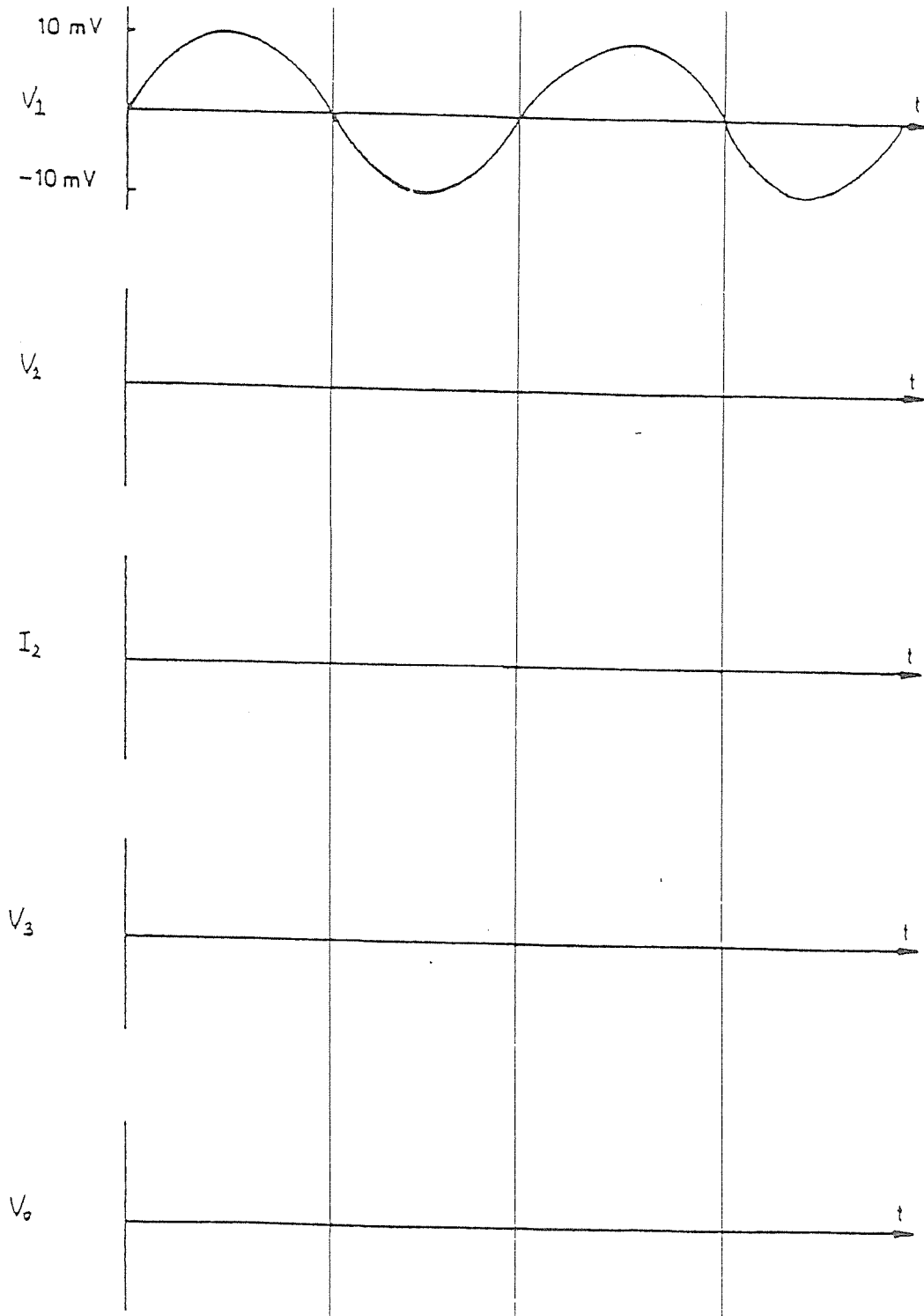
2 (iv) Power dissipated in the transistor, P_d

$P_d = \underline{\hspace{2cm}}$ (/ 2)

Marks

QUESTION 6 (Cont.)

- 8 (b) When a 10mV peak sinusoidal signal is applied to the input, the base current, I_b , varies by ± 10 microamps. Sketch time related waveforms of V_2 , I_2 , V_3 and V_o , showing all relevant magnitude values.



(/ 8)