Started on	Saturday, 18 November 2017, 3:11 PM
State	Finished
Completed on	Saturday, 18 November 2017, 3:39 PM
Time taken	27 mins 51 secs
Grade	**10.0** out of 10.0 (**100**%)

Question 1

Correct

Mark 2.0 out of 2.0

For an NPN BJT operating in the reverse-active region, which of the following is true?

Select one:

○ a. Current flows out of the collector and out of the emitter

○ b. None of these

○ c. Current flows into the collector and out of the emitter

◉ d. Current flows out of the collector and into the emitter ✓

○ e. Current flows into the collector and into the emitter

The correct answer is: Current flows out of the collector and into the emitter

Correct

Marks for this submission: 2.0/2.0.

Question 2

Correct

Mark 2.0 out of 2.0

To keep the base current small for a BJT in the forward-active region, the base must be narrow to minimize recombination in the base, and the doping in the emitter must be much larger than the doping in the base to minimize the number of carriers injected from the base into the emitter.

Select one:

- ⦿ True ✓

- ○ False

The correct answer is 'True'.

Correct

Marks for this submission: 2.0/2.0.

Question 3

Correct

Mark 2.0 out of 2.0

If the DC base-emitter junction voltage, Vbe, for an NPN BJT in the forward-active region is equal to 654 mV, and the DC collector-to-emitter voltage is Vce = 6.4 V, then what is the collector current flowing in this BJT, Ic, in milliamps? Assume that the saturation current for this BJT, Is, is equal to 24 fA. (Note that 1 fA = 1 femtoamp = 1 x 10^-15 A.) Include the effects of base-width modulation, and use an Early Voltage of 48 V. Also assume that the thermal voltage is equal to Vt = kt/q = 26mV. Since Ic is very sensitive to small changes in Vbe, be sure to use Vbe to the nearest millivolt when calculating your answer!

Answer: 2.28 ✓

The correct answer is: 2.28

Correct

Marks for this submission: 2.0/2.0.

Question 4

Correct

Mark 2.0 out of 2.0

An NPN BJT operating in the cutoff region has :

Select one:

- ⦿   a. Vbe < 0 and Vbc < 0 ✓
- ○   b. Vbe > 0 and Vbc < 0
- ○   c. Vbe < 0 and Vbc > 0
- ○   d. None of these
- ○   e. Vbe > 0 and Vbc > 0

The correct answer is: Vbe < 0 and Vbc < 0

Correct

Marks for this submission: 2.0/2.0.

Question 5

Correct

Mark 2.0 out of 2.0

In the forward-active region the emitter current of a PNP BJT consists of electrons injected from the emitter into the base and holes injected from the base into the emitter.

Select one:

- ○   True
- ⦿   False ✓

The correct answer is 'False'.

Correct

Marks for this submission: 2.0/2.0.