Assignment 7

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2018-09-19, 23:59 IST.

1) Which of the following statements is true with regards to the BJT?

- The base width must be designed to be much larger than the minority carrier diffusion length
- The base width must be designed to be much smaller than the minority carrier diffusion length
- The base region should be heavily doped
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
The base width must be designed to be much smaller than the minority carrier diffusion length

2) Which of the following represents the Base Transport Factor for a pnp-BJT?

- $I_{BC}/I_{EB}$
- $I_{BC}/I_{BE}$
- $I_{BE}/I_{BE}$
- $I_{BE}/I_{EB}$
- $I_C/I_E$

No, the answer is incorrect.
Score: 0
4) To bias a BJT in the saturation mode, Base-Emitter Junction is _______ biased and Collector-Base junction is ________ biased.

- reverse, reverse
- reverse, forward
- forward, reverse
- forward, forward

**No, the answer is incorrect.**
**Score: 0**
**Accepted Answers:**
forward, forward

5) Consider that the base transport factor in BJT is given by: $\alpha_T = \frac{1}{\cosh(x_B/z_B)}$, where $x_B$ is 1 point

- the base-width and $L_B$ is the minority carrier diffusion length in base. Find out the base-width needed in a pnp BJT to achieve a base transport factor of $\alpha_T = 0.9967$. Assume diffusion coefficient is $10 cm^2/s$ and minority carrier lifetime in base is $10^{-7} s$

- 0.1 um
- 2.35 um
- 0.2 um
- None of the above

**No, the answer is incorrect.**
**Score: 0**
**Accepted Answers:**
0.81 um

6) In a BJT biased in the active mode, the base current is $6 mA$, and the collector current is $510 mA$. Find the value of $\alpha$.

- 0.5
- 0.92
- 0.988
- 0.965

**No, the answer is incorrect.**
**Score: 0**
**Accepted Answers:**
0.988

7) Which of the following in the BJT is the heavily doped region?

- Emitter
8) Base-width modulation in a BJT results in:
   - an increase in output conductance of the device
   - a decrease in output conductance of the device
   - no change in output conductance
   - none of the above
   
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: 
   - an increase in output conductance of the device

9) A BJT is generally biased in _______ mode of operation in analog amplifier circuits.
   - saturation
   - cut-off
   - inverse-active
   - active
   
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: 
   - active

10) Early voltage represents the voltage at which:
   - break-down occurs at the junctions.
   - saturation of collector current begins.
   - curves on collector-current characteristics intersect the voltage axis, when extrapolated to zero collector current value.
   - none of the above
   
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: 
   - curves on collector-current characteristics intersect the voltage axis, when extrapolated to zero collector current value.