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Week 15 Quiz: Beyond the Ideal BJT
ECE 305: Semiconductor Devices
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Answer the **multiple choice questions** below by choosing the **one, best answer**.

- 1) Which of the following would reduce base-width modulation?
 - a) Increasing the emitter doping.
 - b) Increasing the base doping.
 - c) Increasing the collector doping.
 - d) Decreasing the emitter doping.
 - e) Decreasing the base doping.

- 2) Which of the following would reduce emitter current crowding?
 - a) Increasing the emitter doping.
 - b) Increasing the base doping.
 - c) Increasing the collector doping.
 - d) Decreasing the emitter doping.
 - e) Decreasing the base doping.

- 3) Which two of the following would increase the emitter injection efficiency?
 - a) Increasing the emitter doping.
 - b) Increasing the base doping.
 - c) Increasing the collector doping.
 - d) Decreasing the emitter doping.
 - e) Decreasing the base doping.

- 4) Which of the following would decrease the collector breakdown voltage?
 - a) Increasing the emitter doping.
 - b) Increasing the base doping.
 - c) Increasing the collector doping.
 - d) Decreasing the emitter doping.
 - e) Decreasing the base doping.

- 5) What is the order of highest doping, next highest doping, and lightest doping in a BJT?
- a) Emitter, base, collector.
 - b) Emitter, collector, base.
 - c) Base, collector, emitter.
 - d) Base, emitter, collector.
 - e) Collector, base, emitter.
- 6) If a BJT is hooked up in the inverted active mode, which of the following is true as compared to the forward active mode?
- a) The base transport factor is lower.
 - b) The base transport factor is higher.
 - c) The emitter injection efficiency is lower.
 - d) The emitter injection efficiency is higher.
 - e) The base transit time is longer.
- 7) To make a good HBT, which layer(s) should have a wide bandgap?
- a) The emitter.
 - b) The base.
 - c) The emitter and the base.
 - d) The base and collector.
 - e) The collector.
- 8) How is the transconductance of a transistor defined?
- a) The change in output current divided by the change in output voltage.
 - b) The change in output voltage divided by the change in output current.
 - c) The change in input current divided by the change in input voltage.
 - d) The change in input voltage divided by the change in input current.
 - e) The change in output current divided by the change in input voltage.