(١٥) الفرقة الأولى
مسترجع ٢٠١٩

Menoufia University | Course Name: Electronics (2) | Mid-term Exam.

Faculty of Electronic Engineering | 1st Year Students- 3/4/2019 | Time: 1-hour

Name of Student .....

Section No: ..... Acadimic No .....

Part I: The Bipolar Junction Transistor

Question One: Multiple choice (chose the correct answer) لاحظ أن: الأسئلة على الوجهين

1- The collector area is considerably greater than the emitter area. This is mainly due to:
   (a) Its length should be greater than the minority carrier diffusion length.
   (b) More doping than the emitter.
   (c) Handel more power, hence more surface area is required for heat dissipation.
   (d) Its area controls the amount of collector current.

2- The base width is small compared to:
   (a) The minority carrier diffusion length.
   (b) The base majority carrier diffusion length.
   (c) The collector-base junction depletion width.
   (d) Both (a) and (b).

3- The current components in a BJT are all diffusion currents. Since
   (a) No potential difference within the depletion regions.
   (b) The electric field is confined in all three regions (emitter, base, and collector).
   (c) There is an electric field within the space charge regions.
   (d) The potential is constant in all three regions (emitter, base, and collector).

4- .....is the most frequently encountered transistor configuration.
   (a) Common-Emitter (b) Common-Base (c) Common-Collector

5- .....is the configuration used for matching purposes.
   (a) Common-Emitter (b) Common-Base (c) Common-Collector

Question Two:

Sketch a figure to describe the majority- and minority-carrier flow of an ***pnp*** transistor. Describe the resulting carrier motion.

اقلب الورقة من فضلك

Question Three:

Using the output characteristics given in Fig.

(a) Determine β_{dc} at $I_B = 30$ μA and $V_{CE} = 10$V, then calculate α_{dc} and the resulting level of I_E.

(b) Determine I_{CEO} at $V_{CE} = 10$ V.

(c) Using the β_{dc} determined in part (a), calculate I_{CBO}.