



COLLEGE OF ENGINEERING & TECHNOLOGY

Department: Electronics and Communications Engineering

Course Title: Electronic Devices I I

Course Code: EC332

Cairo Branch

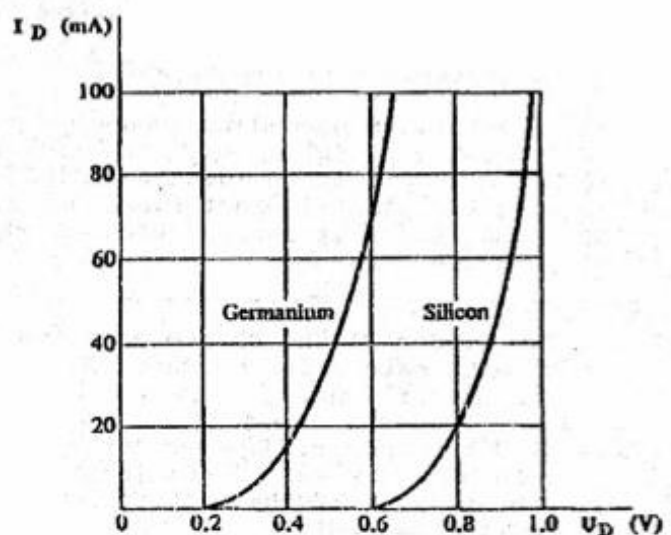
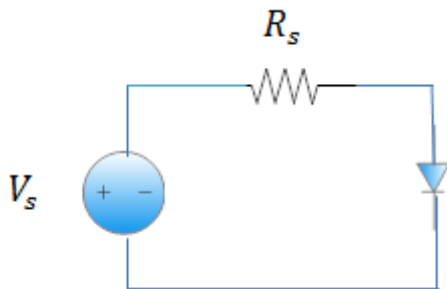
Sheet 1

I. Indicate whether each of the following statements is true or false (give reasons):

1. As the temperature increased, the conductivity of most semiconductor is increased.
2. The depletion layer width of a P-n junction decrease as the reverse bias voltage increase.
3. The reverse saturation current of P-n junction is independent of temperature.
4. The cut-in voltage of a p-n Junction decrease as the temperature increases.
5. The intrinsic carrier concentration of a semiconductor increases with the temperature.
6. The P-n junction built-in potential is higher at 400K than at 300K (room temperature).
7. The P-n junction reverse saturation current is higher at 400K than 300K.

II. Answer the following problem:

Consider the forward characteristic curves shown for typical silicon and germanium diodes.



- a) Determine graphically the resistance R_s that allows a current of 20 mA to flow through the silicon diode if $V_s=1V$.
- b) What would be the voltage drop on the diode if the silicon diode is replaced by the germanium diode?
- c) What is the new value of R_s in case of germanium diode?
- d) Determine graphically the operation point of the device.