جامعة الموصل / كلية الهندسة

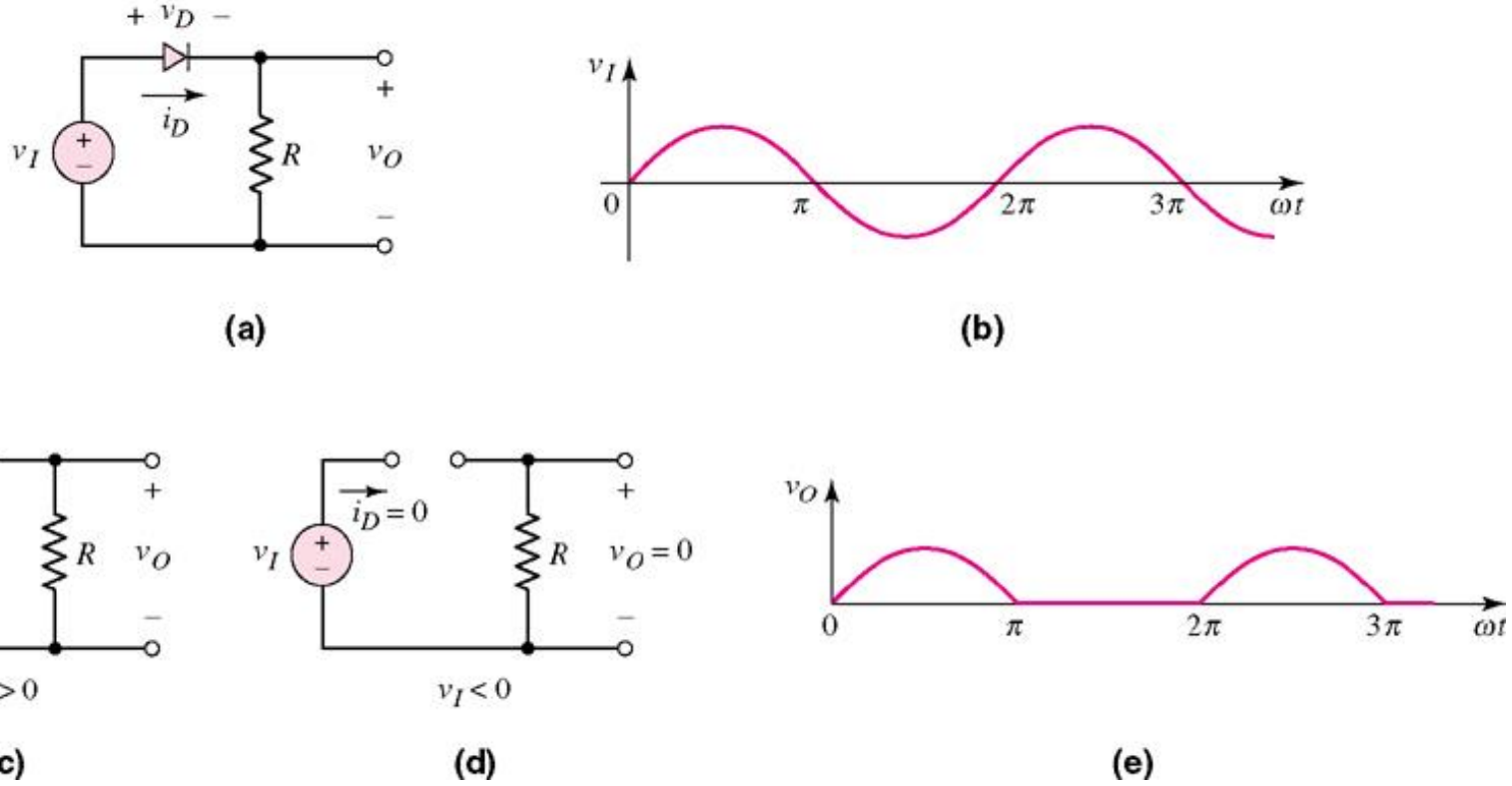
قسم الهندسة الكهربائية

Subject Title : Electronic Circuits
Subject Code: ELCI214
Class :2nd level
Instructor: Marwan Ahmed

Course Description Outlines

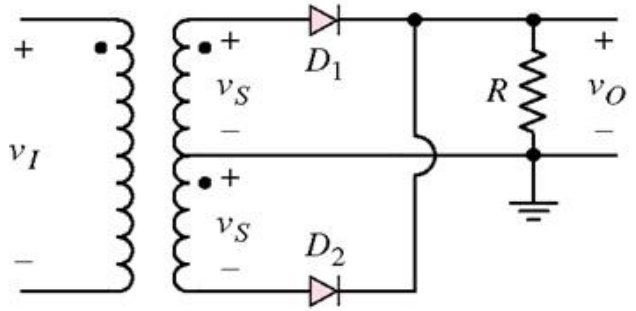
- Diode Application (clipper and clamper).
- Rectifier and Filters
- Voltage Multipliers.
- LED Applications.
- Zener Diode Application (Regulation)
- Transistor Operation Principle.
- Transistor Application (Amplifier).
- Thyristor Applications.
- Silicon –Controlled Rectifier (SCR).

The diode rectifier
1-Half-wave rectifier

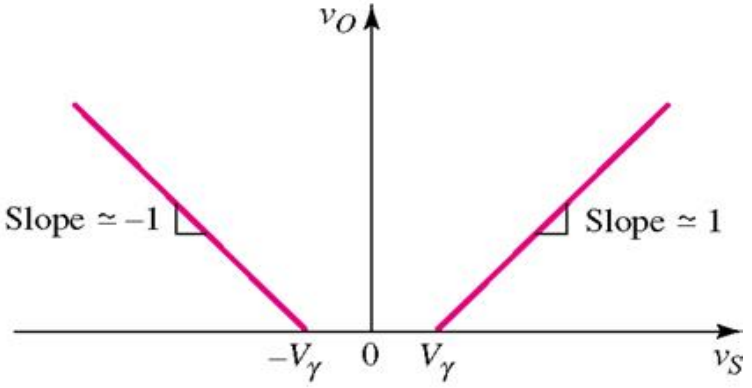


(a) Diode half-wave rectifier circuit,
(b) sinusoidal input signal,
(c) equivalent circuit for vI > 0.
(d) equivalent circuit for vI < 0.
(e) rectified output signal.

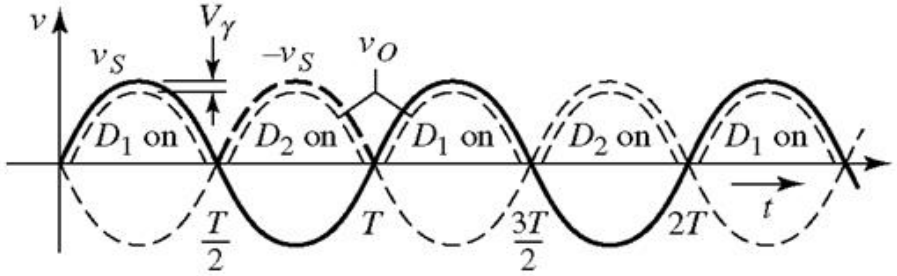
Full-wave rectifier



(a)



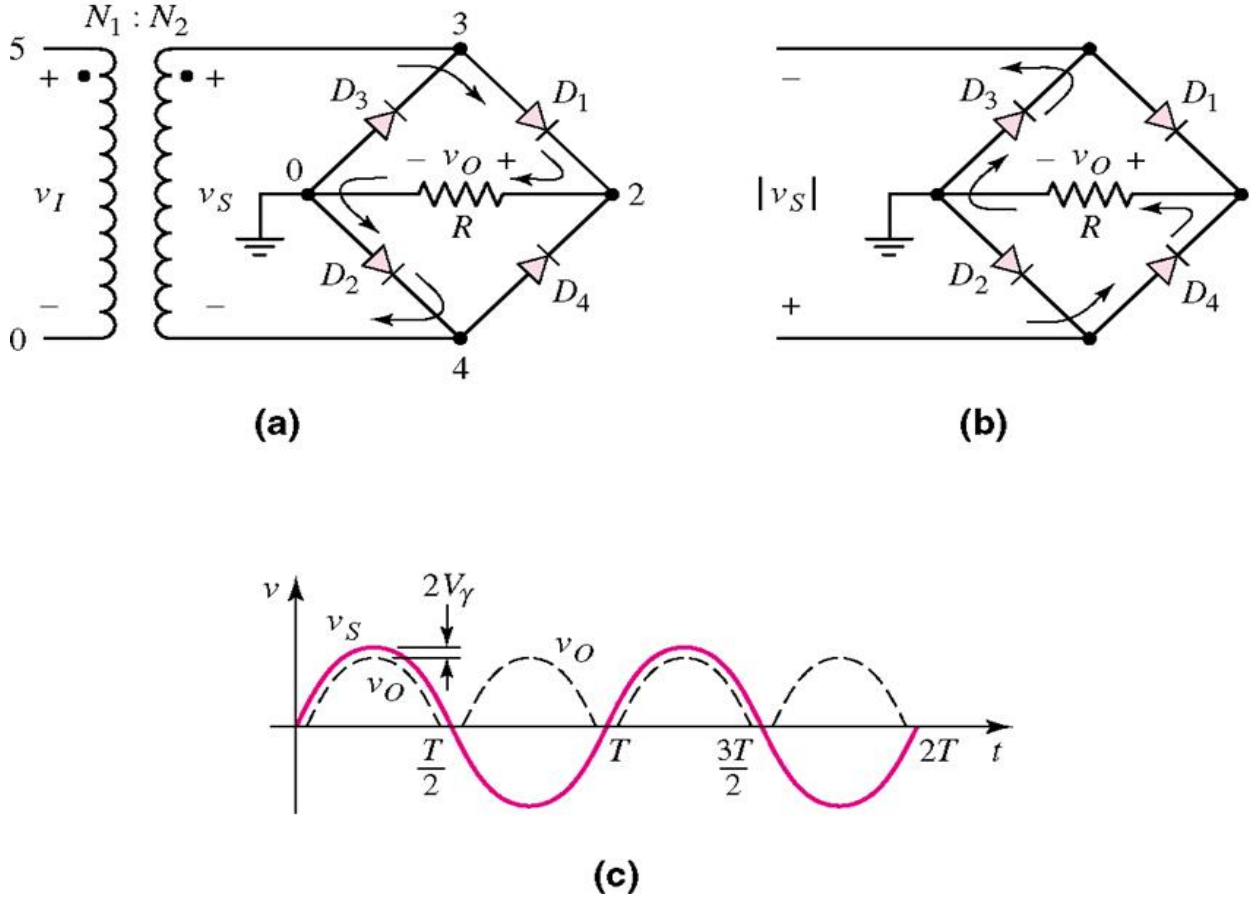
(b)



(c)

(a) circuit with center-tapped transformer
(b) voltage transfer characteristics
(c) input and output waveforms

3-A full-wave bridge rectifier

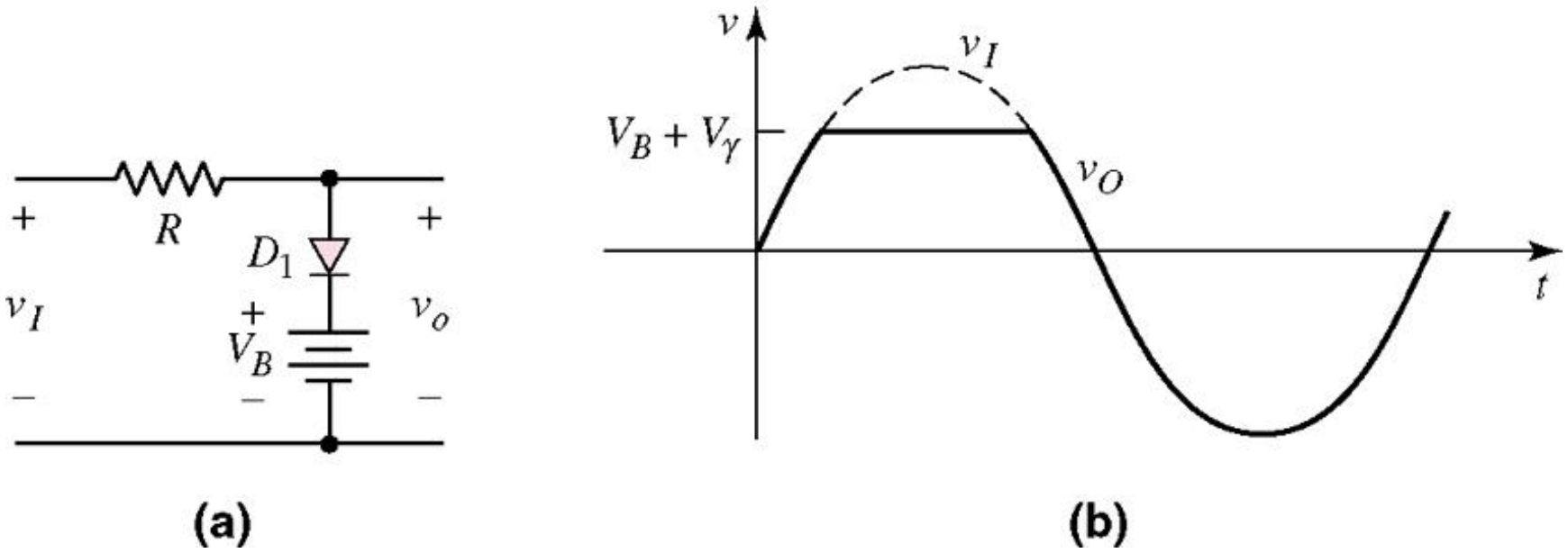


(a) circuit showing the current direction for a positive input cycle

(b) current direction for a negative input cycle

(c) input and output voltage waveforms

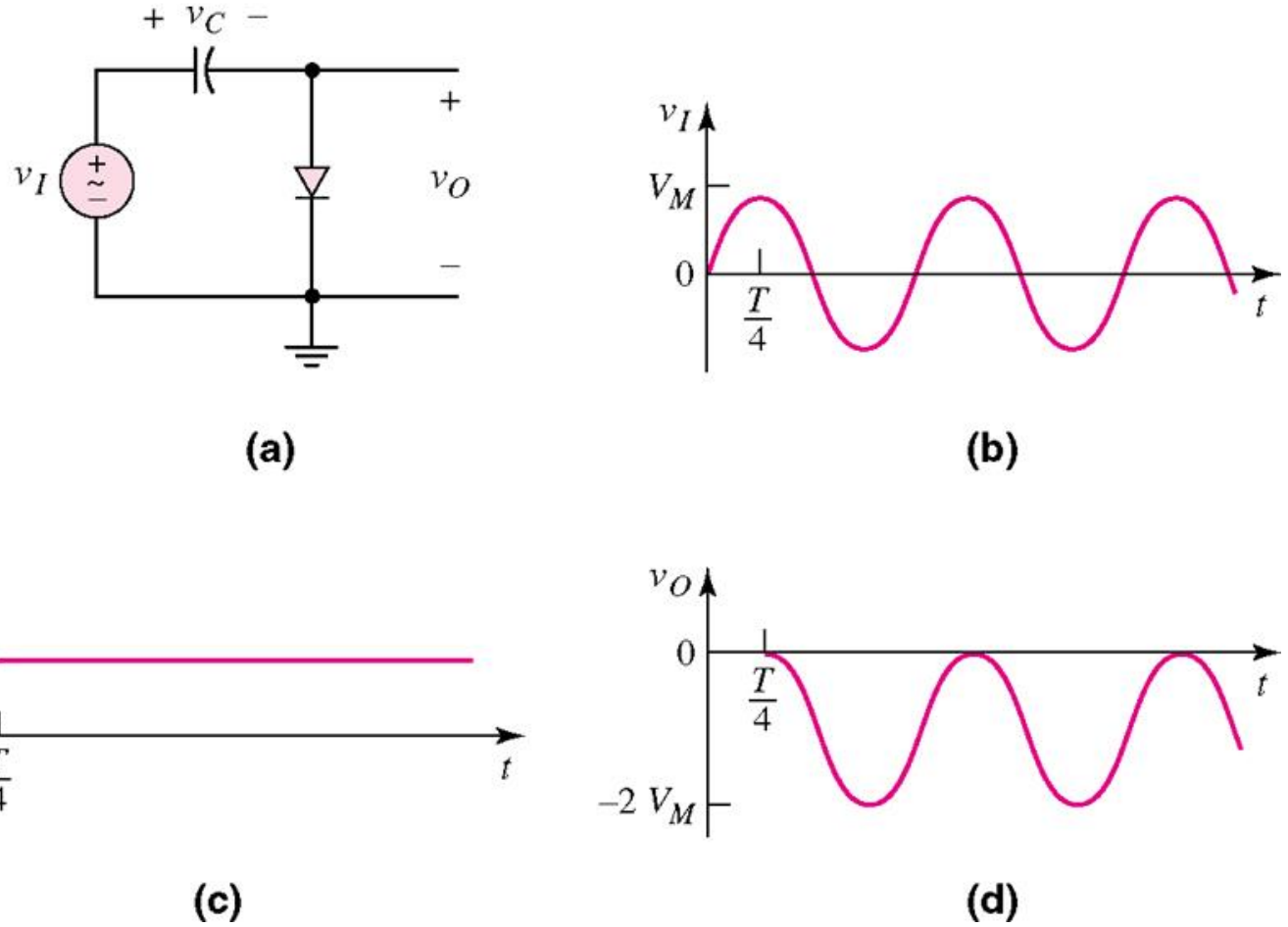
Single-diode clipper



(a) circuit

(b) output response

A Diode clamper circuit

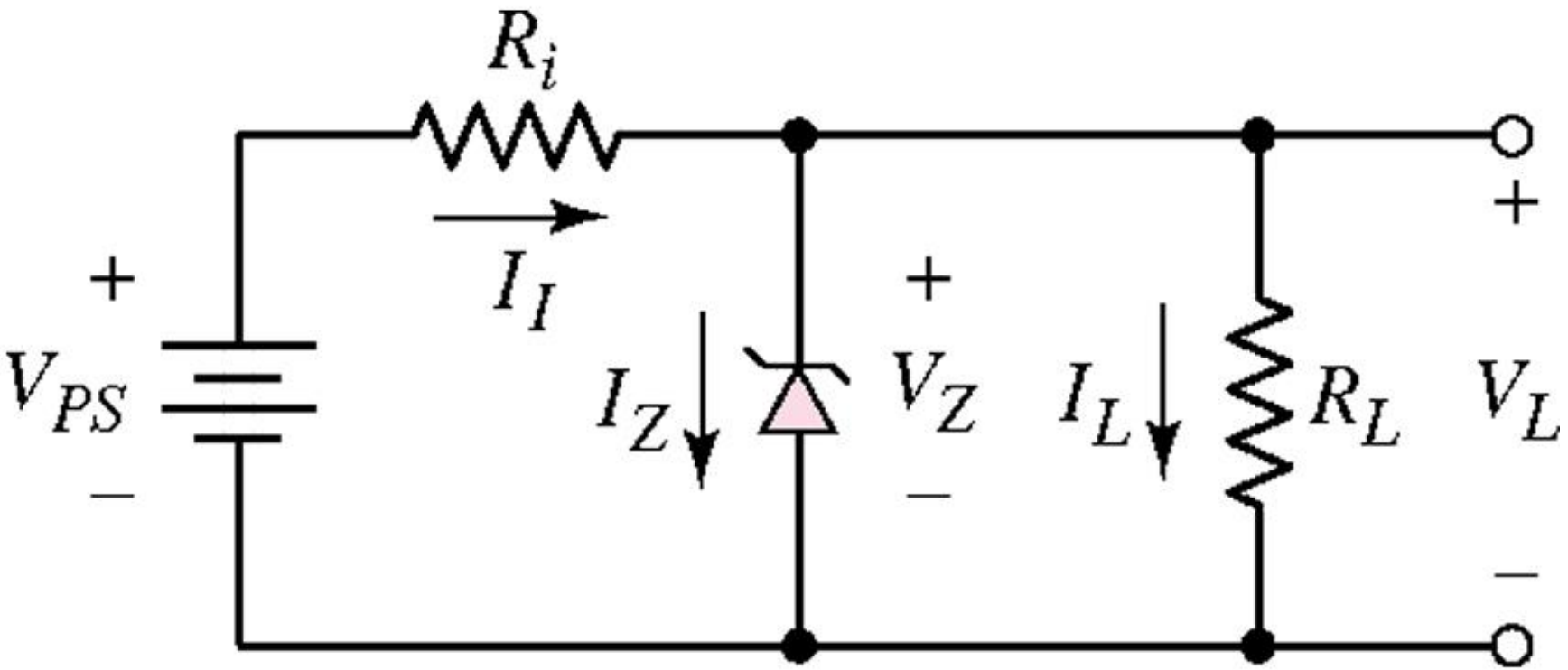


(a) a typical diode clamper circuit

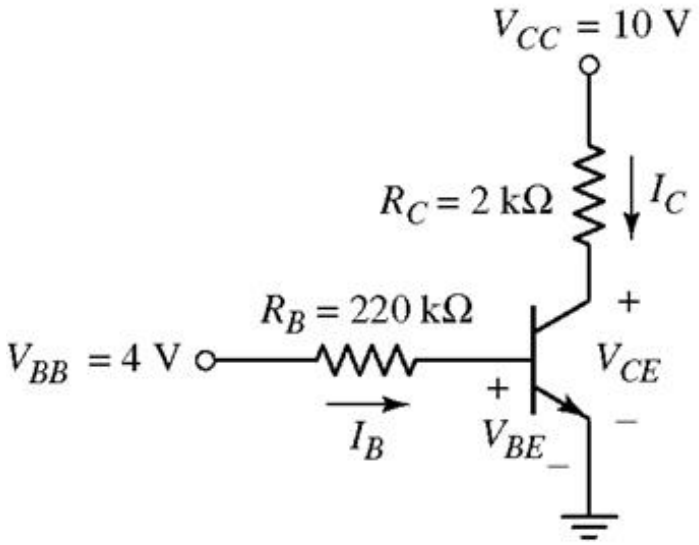
(b) the sinusoidal input signal

(c) the capacitor voltage, and (d) the output voltage

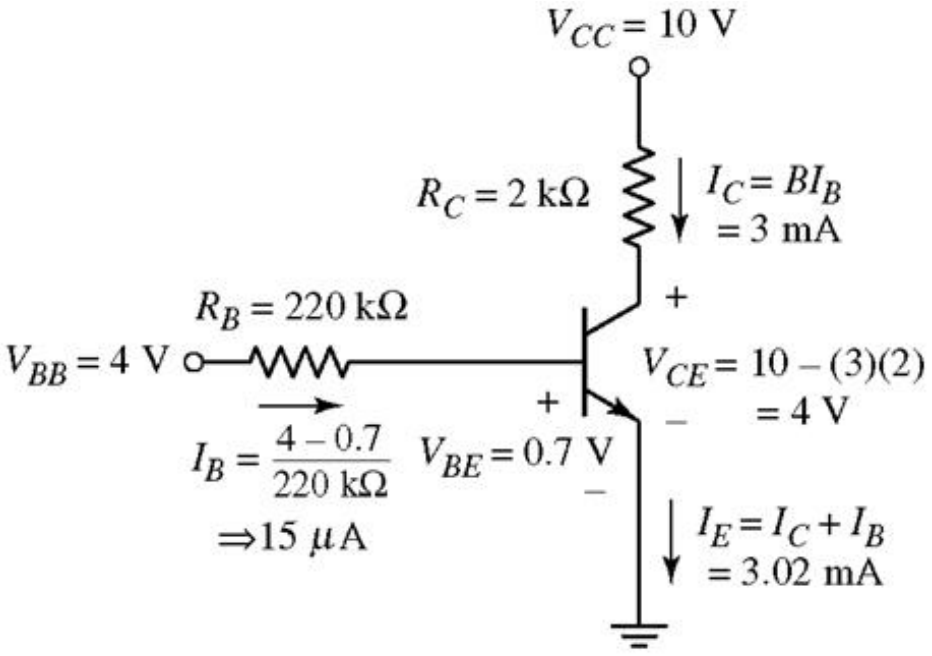
A Zener diode voltage regulator circuit



The Bipolar Junction Transistor



(a)



(b)

References

- Electronic Devices by Thomas L. Floyd
- Electronic Devices and Circuit Theory by Robert Boylestad and Louis Nashelsky
- Electronic Circuit Analysis and Design by Neamen