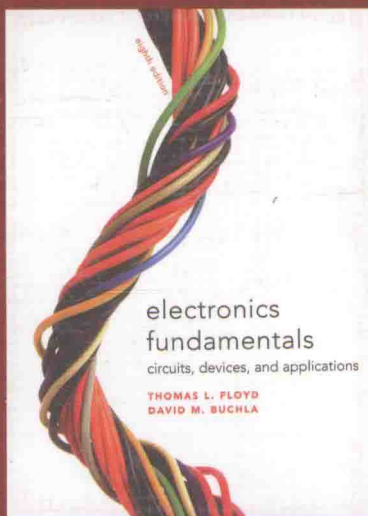


清华版双语教学用书

PEARSON



电路、器件及应用

(第8版)

Electronics Fundamentals
Circuits, Devices, and Applications
(Eighth Edition)

Thomas L. Floyd
David M. Buchla 著

于歆杰 编译

清华大学出版社



清华版双语教学用书

Electronics Fundamentals
Circuits, Devices, and Applications
(Eighth Edition)

电路、器件及应用 (第8版)

Thomas L. Floyd
David M. Buchla 著

于歆杰 编译



清华大学出版社
北京

北京市版权局著作权合同登记号 图字: 01-2013-2714

Authorized Adaptation from the English language edition, entitled **ELECTRONICS FUNDAMENTALS: CIRCUITS, DEVICES, AND APPLICATIONS**, 8th Edition., 978-0-13-507295-0 by **THOMAS L. FLOYD** and **DAVID M. BUCHLA**, published by Pearson Education, Inc., publishing as Prentice Hall, copyright © 2010.

All Rights Reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage retrieval system, without permission from Pearson Education, Inc.

ENGLISH language adaptation edition published by **PEARSON EDUCATION ASIA LTD.** and **TSINGHUA UNIVERSITY PRESS** Copyright © 2014.

本书影印改编版由培生教育出版集团授权给清华大学出版社出版发行。未经许可,不得以任何方式复制或抄袭本书的任何部分。

ENGLISH language adaptation edition is manufactured in the People's Republic of China, and is authorized for sale only in People's Republic of China excluding Taiwan, Hong Kong SAR and Macau SAR.

本书封面贴有 **Pearson Education**(培生教育出版集团)激光防伪标签,无标签者不得销售。

版权所有,侵权必究。侵权举报电话: 010-62782989 13701121933

图书在版编目(CIP)数据

电路、器件及应用: 第8版: 英、汉/(美)弗洛伊德(Floyd, T. L.), (美)布什拉(Buchla, D. M.)著;于歆杰编译. —北京: 清华大学出版社, 2014

(清华版双语教学用书)

ISBN 978-7-302-33431-6

I. ①电… II. ①弗… ②布… ③于… III. ①电路理论—高等学校—教材 IV. ①TM13

中国版本图书馆 CIP 数据核字(2013)第 296566 号

责任编辑: 梁 颖 李 晔

封面设计: 何凤霞

责任校对: 白 蕾

责任印制: 宋 林

出版发行: 清华大学出版社

网 址: <http://www.tup.com.cn>, <http://www.wqbook.com>

地 址: 北京清华大学学研大厦 A 座

社 总 机: 010-62770175

投稿与读者服务: 010-62776969, c-service@tup.tsinghua.edu.cn

质量反馈: 010-62772015, zhiliang@tup.tsinghua.edu.cn

邮 编: 100084

邮 购: 010-62786544

印 装 者: 清华大学印刷厂

经 销: 全国新华书店

开 本: 210mm×285mm 印 张: 65.75 插 页: 9

版 次: 2014 年 1 月第 1 版

印 数: 1~2000

定 价: 149.00 元

字 数: 1865 千字

印 次: 2014 年 1 月第 1 次印刷

产品编号: 049832-01

	Digit	Color
Resistance value, first three bands: First band—1st digit Second band—2nd digit *Third band—multiplier (number of zeros following the 2nd digit)	0	Black
	1	Brown
	2	Red
	3	Orange
	4	Yellow
	5	Green
	6	Blue
	7	Violet
	8	Gray
	9	White
Fourth band—tolerance	±5%	Gold
	±10%	Silver

TABLE 1-1

4-band resistor color code.

* For resistance values less than 10 Ω , the third band is either gold or silver. Gold is for a multiplier of 0.1 and silver is for a multiplier of 0.01.

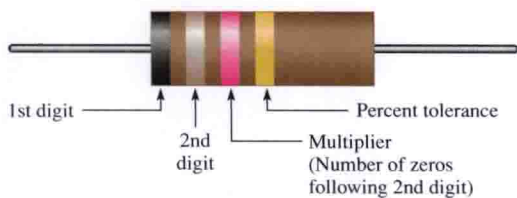


FIGURE 1-27

Color-code bands on a 4-band resistor.

FIGURE 1-28



FIGURE 1-29

Color-code bands on a 5-band resistor.

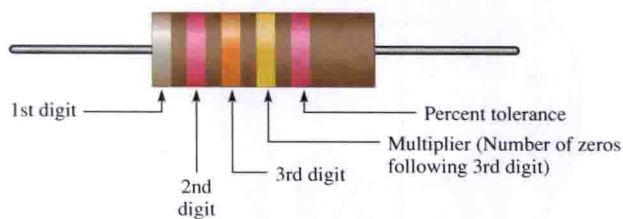
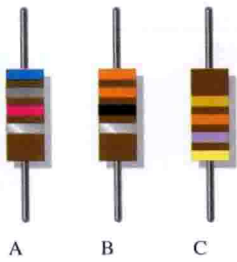
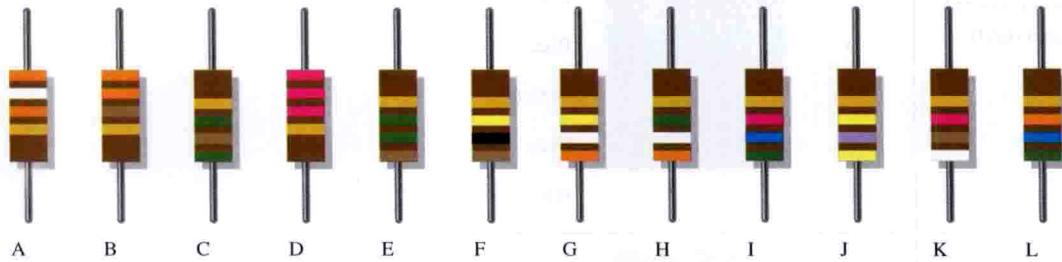


FIGURE 1-30





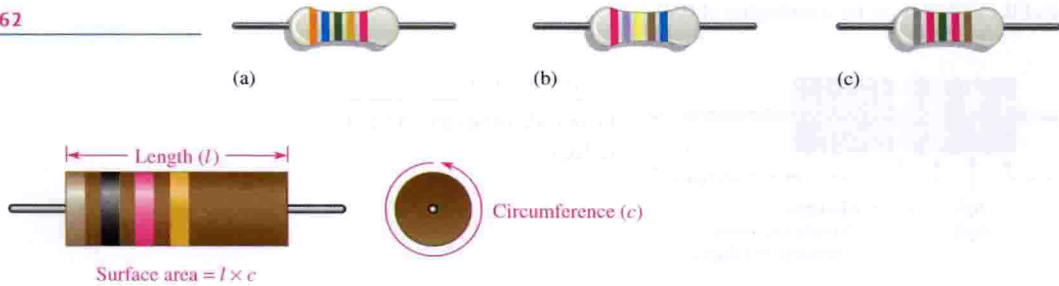
(a)



(b)

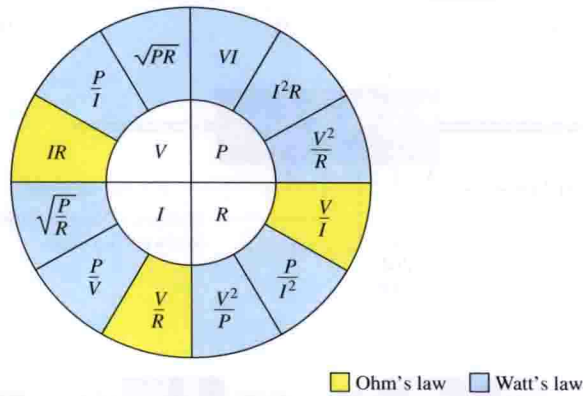
▲ FIGURE 1-61

► FIGURE 1-62



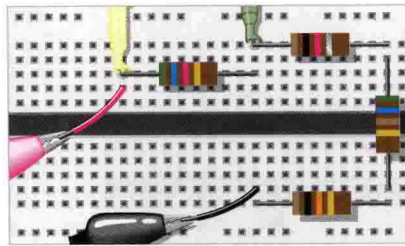
▲ FIGURE 2-16

► FIGURE 2-26





(a) Meter with leads going to protoboard

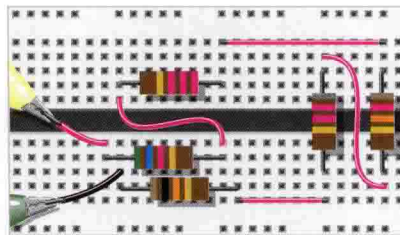


(b) Protoboard with meter leads (yellow and green) and power supply leads (red and black) connected

▲ FIGURE 3-75



(a) Meter with leads going to protoboard

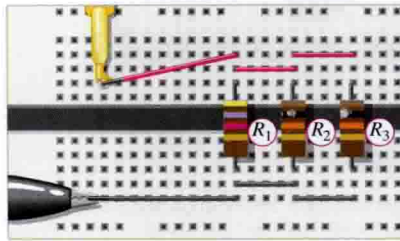


(b) Protoboard with meter leads connected

▲ FIGURE 3-79

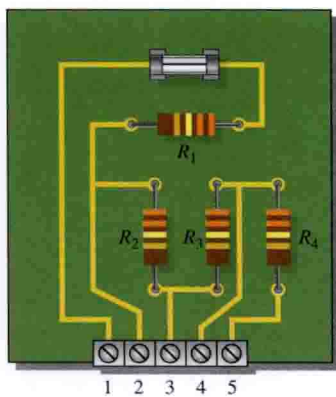


(a) Meter with yellow lead going to protoboard and red lead going to the positive terminal of the 25 V power supply.

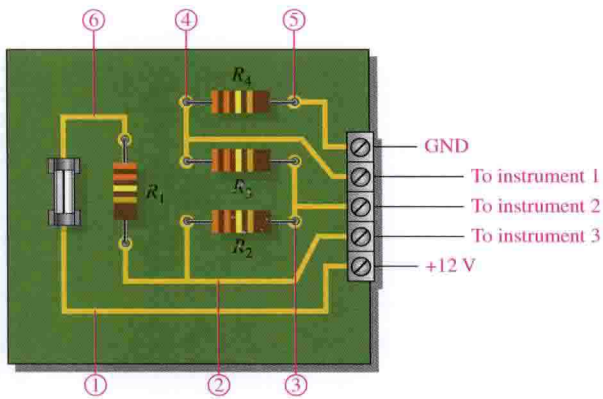


(b) Protoboard with leads connected. Yellow lead is from meter and gray lead is from 25 V power supply ground. The red meter lead goes to +25 V.

▲ FIGURE 4-80



▲ FIGURE 5-70



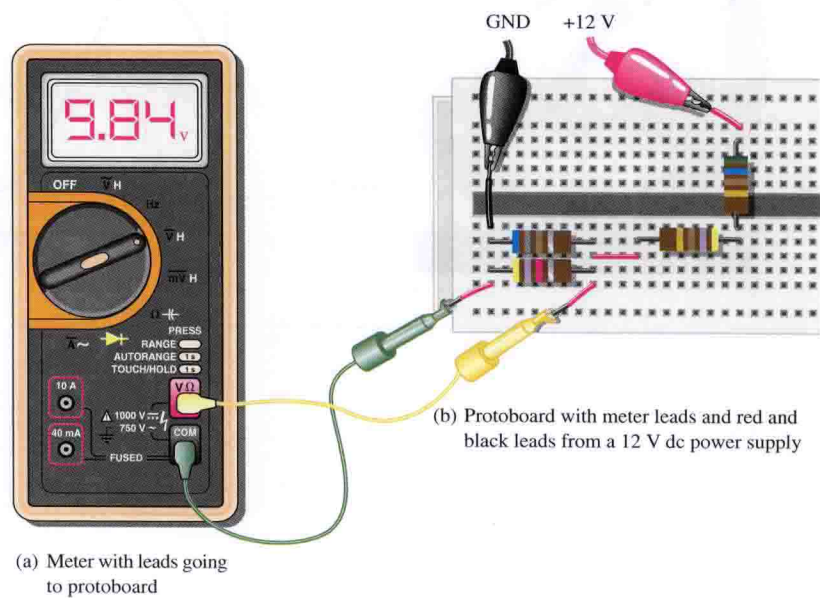
The following voltmeter readings are taken at test points 1 through 6 with respect to ground. The readings are in volts.

Case	Test points (volts)					
	1	2	3	4	5	6
1	0	0	0	0	0	0
2	12	0	0	0	0	0
3	12	0	0	0	0	12
4	12	11.6	0	0	0	12
5	12	11.3	10.9	0	0	12
6	12	11	10.3	10	0	12
7	12	5.9	0	0	0	12
8	12	7.8	3.8	0	0	12

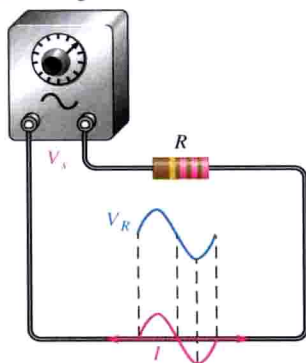


▲ FIGURE 5-72

► FIGURE 5-87

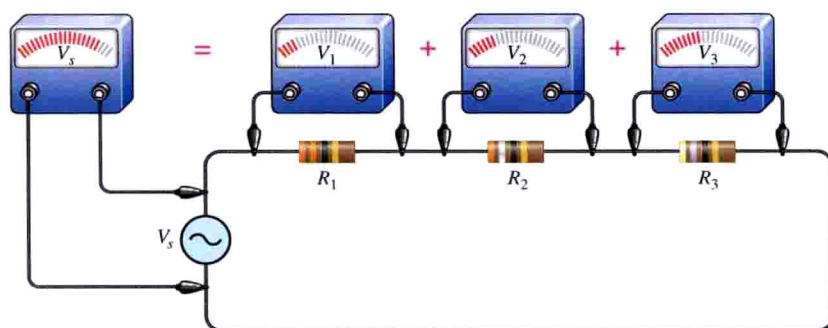


Sine wave generator



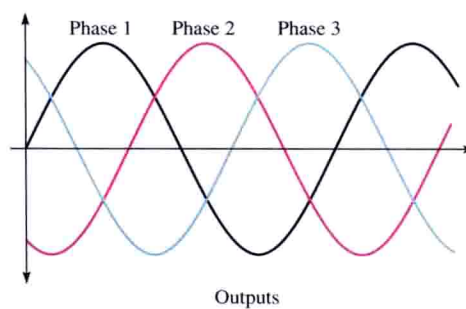
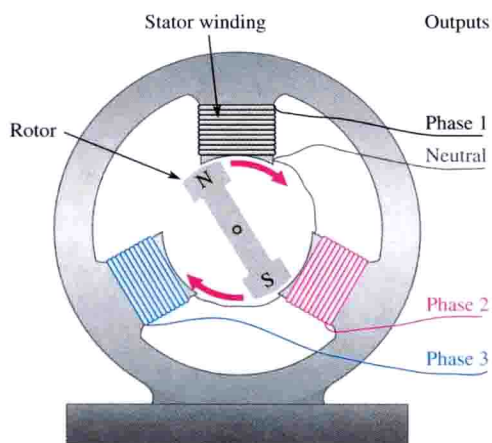
◀ FIGURE 6-31

A sinusoidal voltage produces a sinusoidal current.

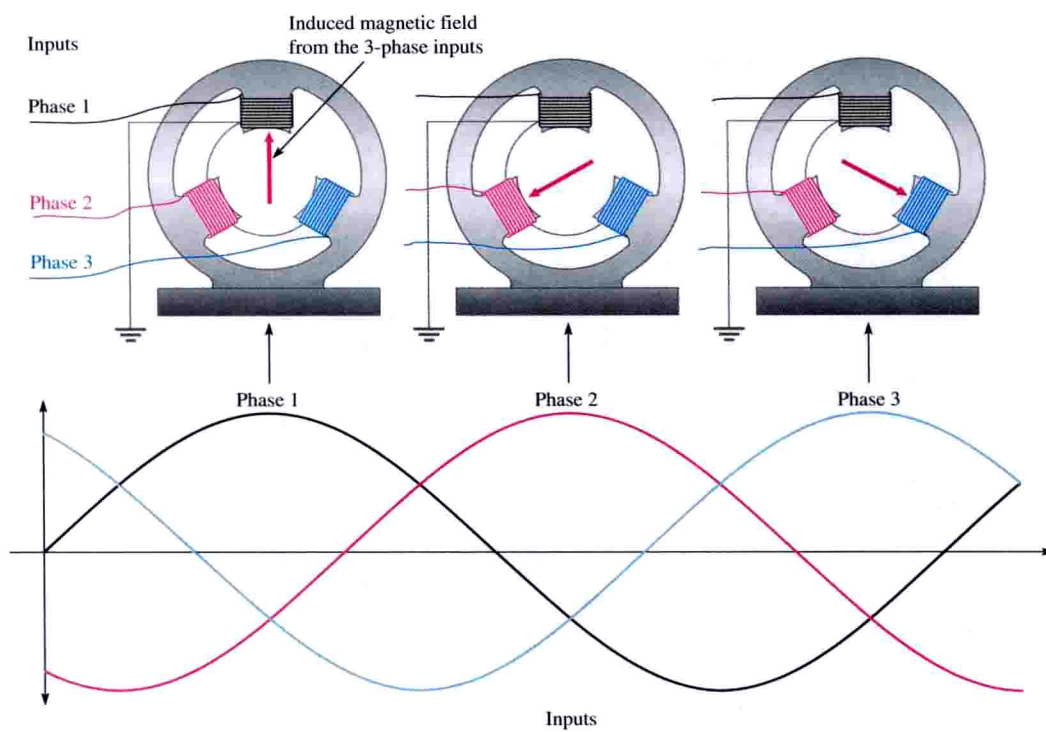


◀ FIGURE 6-32

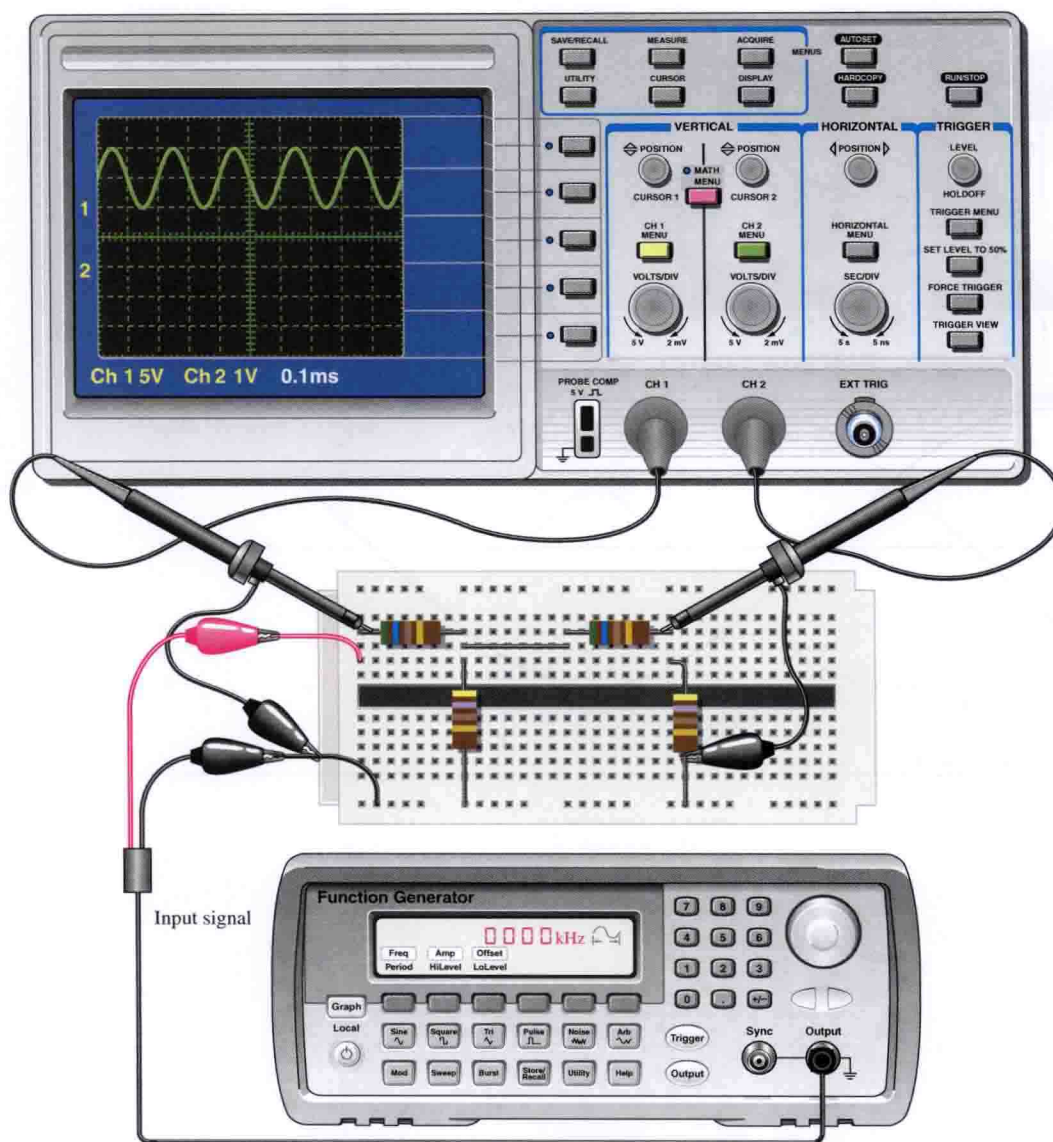
Illustration of Kirchhoff's voltage law in an ac circuit.



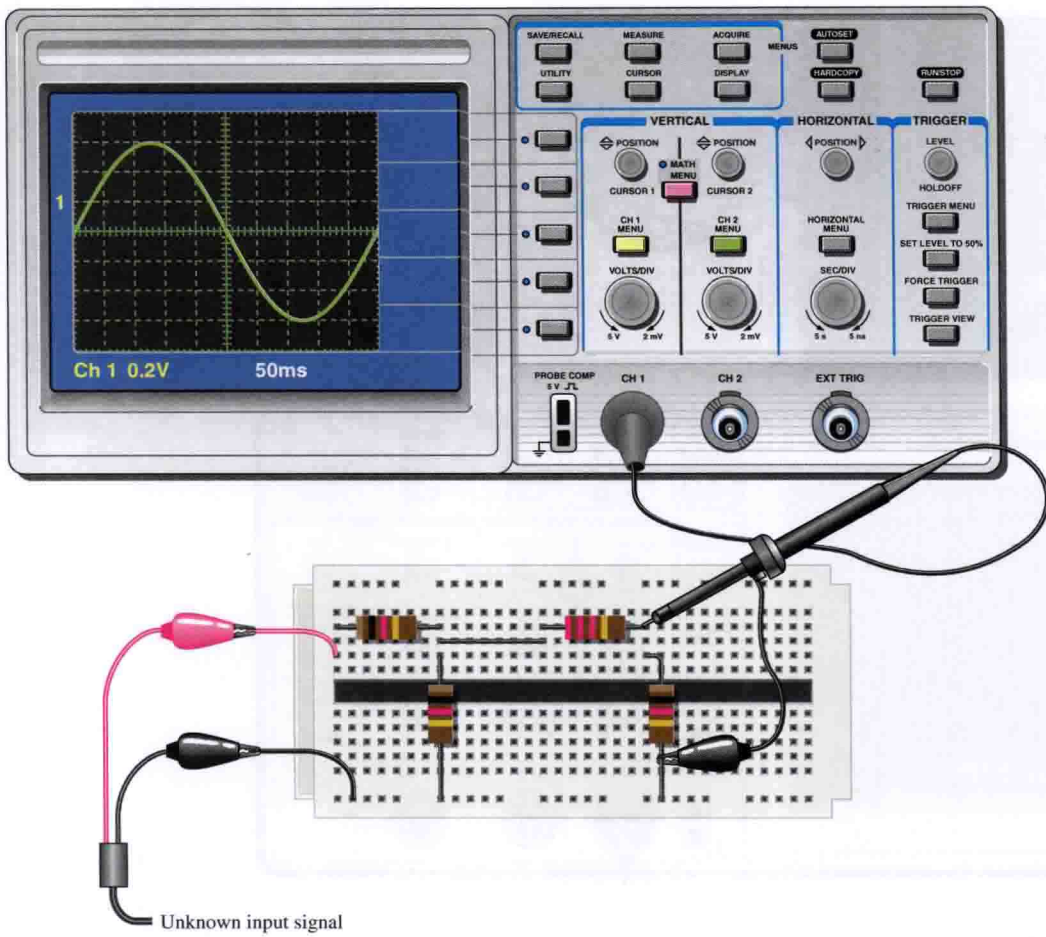
▲ FIGURE 6-41



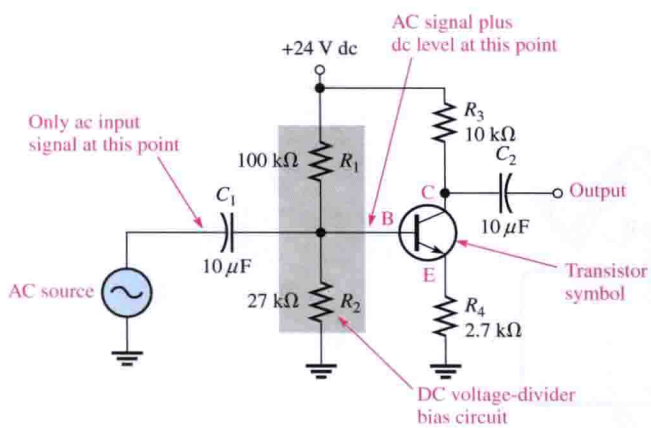
▲ FIGURE 6-43



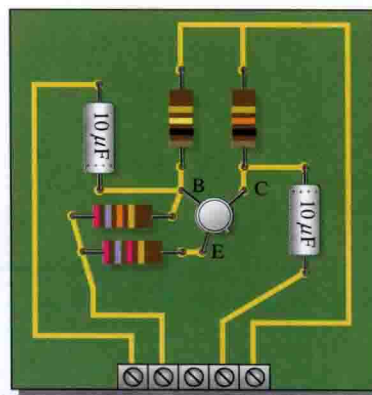
▲ FIGURE 6-87



▲ FIGURE 6-88

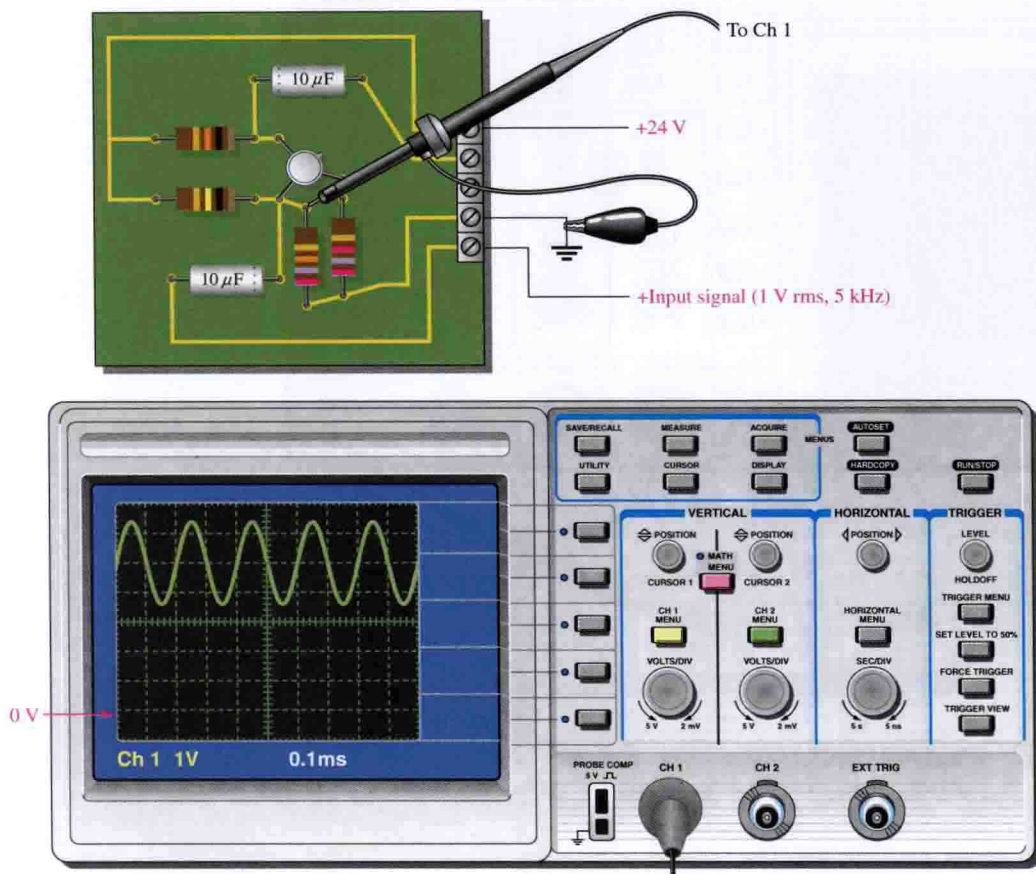


(a) Amplifier schematic



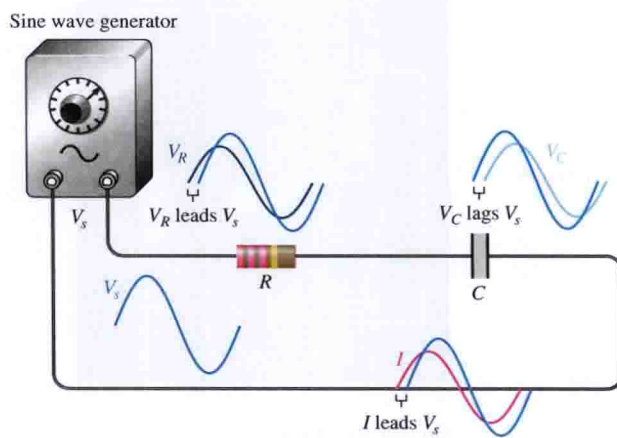
(b) Amplifier board

▲ FIGURE 7-57

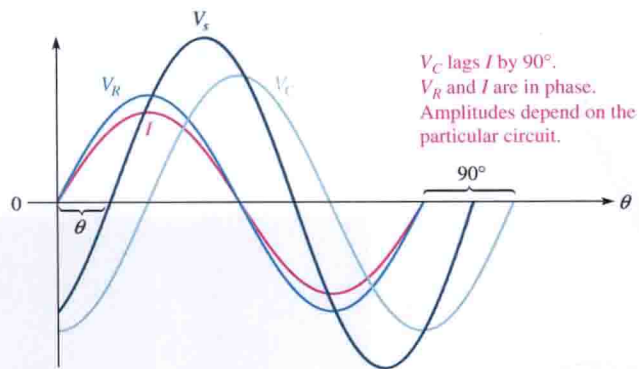


Note: Ground reference has been established as indicated by 0 V.

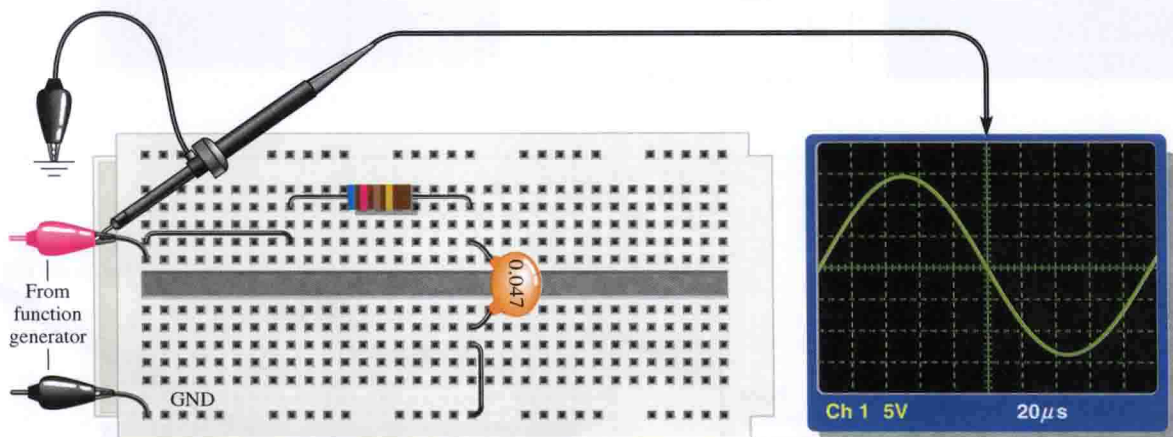
▲ FIGURE 7-58



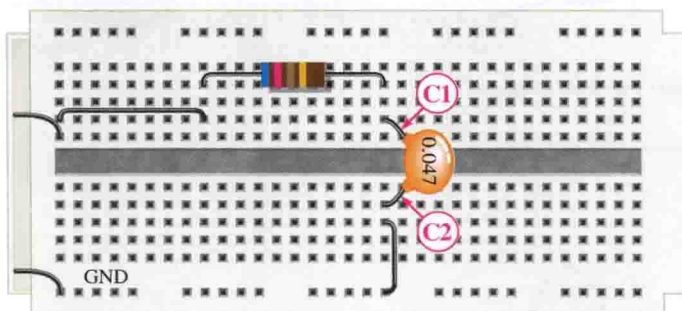
▲ FIGURE 8-1



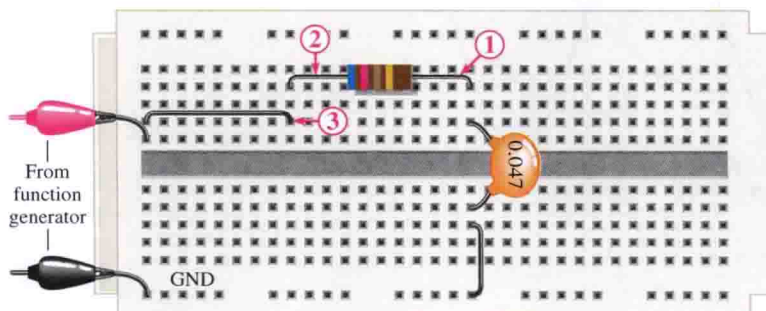
▲ FIGURE 8-10



(a) Scope shows the correct voltage at the input.



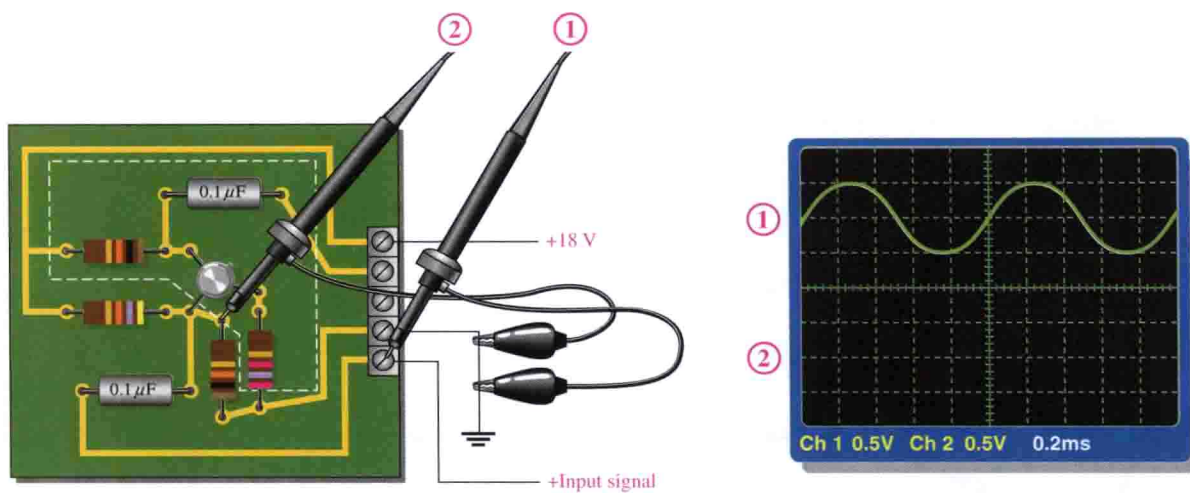
(b) With function generator disconnected, the meter indicates the capacitor is not shorted.



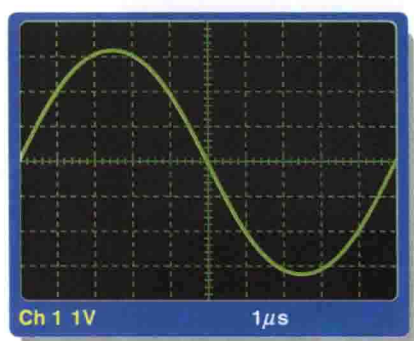
(c) The voltage is found at point ③, indicating that one of the two used protoboard contacts in that row is bad.



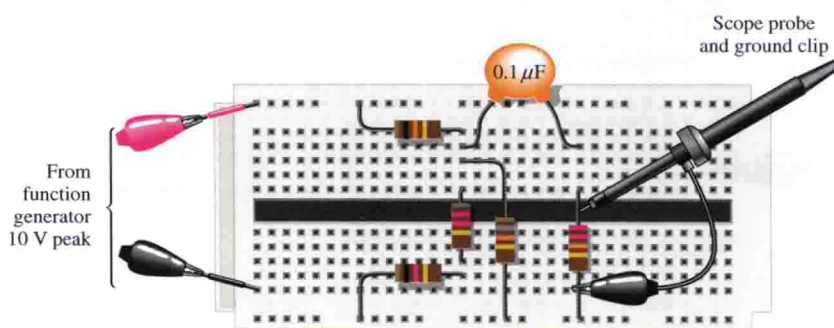
▲ FIGURE 8-60



▲ FIGURE 8-63

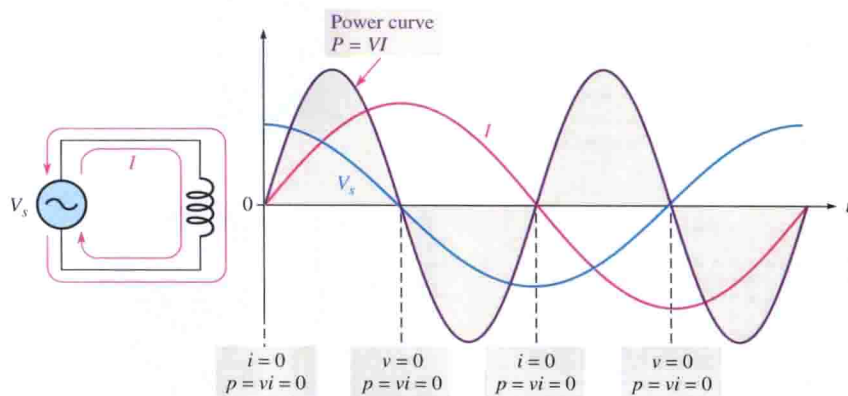


(a) Oscilloscope display



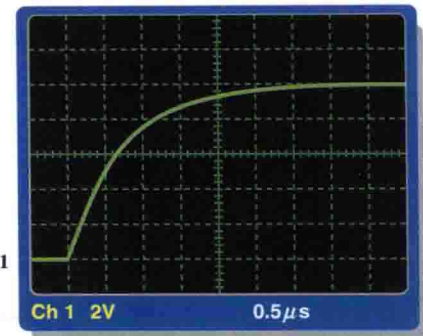
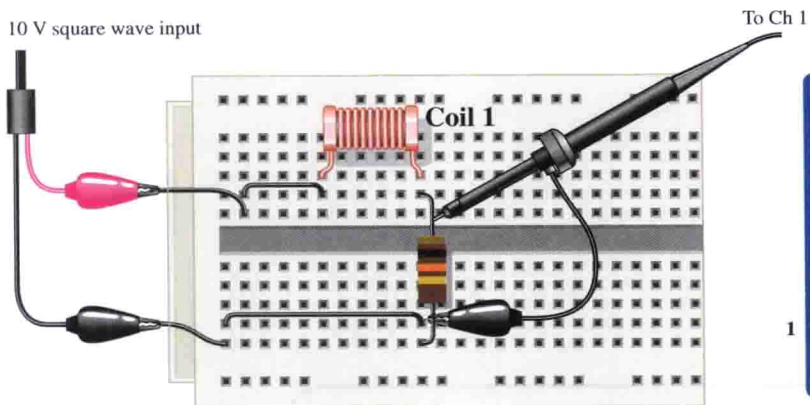
(b) Circuit with leads connected

▲ FIGURE 8-92



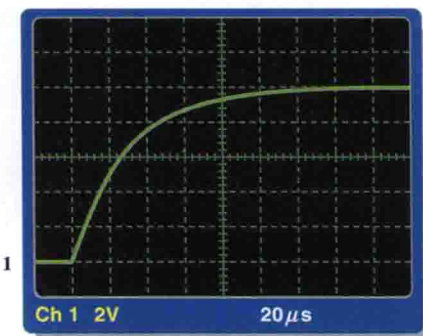
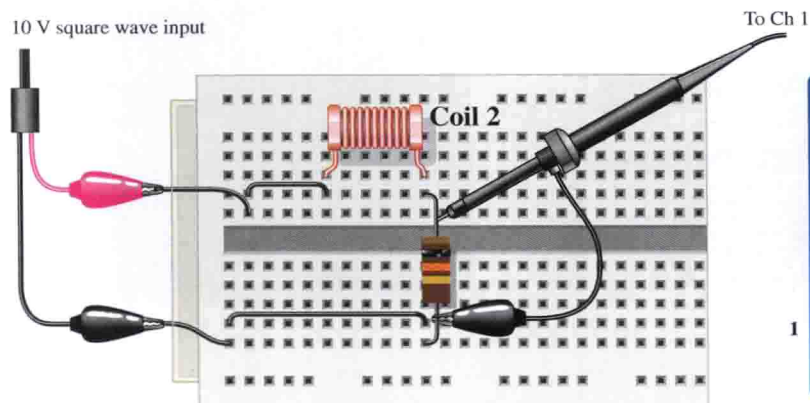
▲ FIGURE 9-35

10 V square wave input



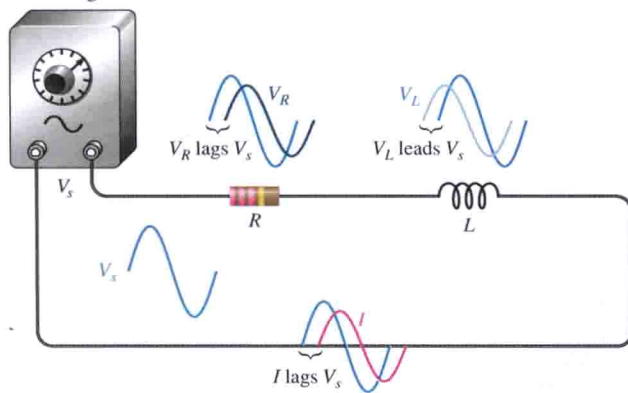
▲ FIGURE 9-39

10 V square wave input

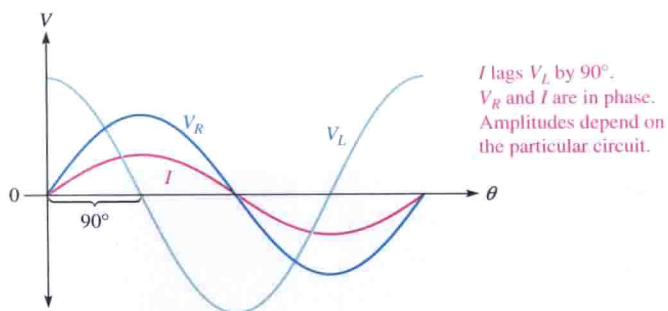


▲ FIGURE 9-40

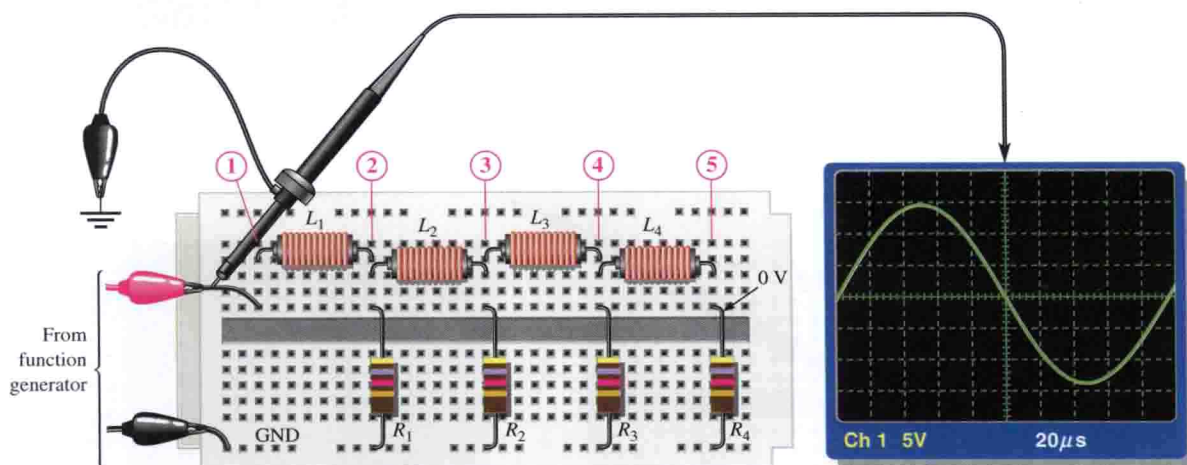
Sine wave generator



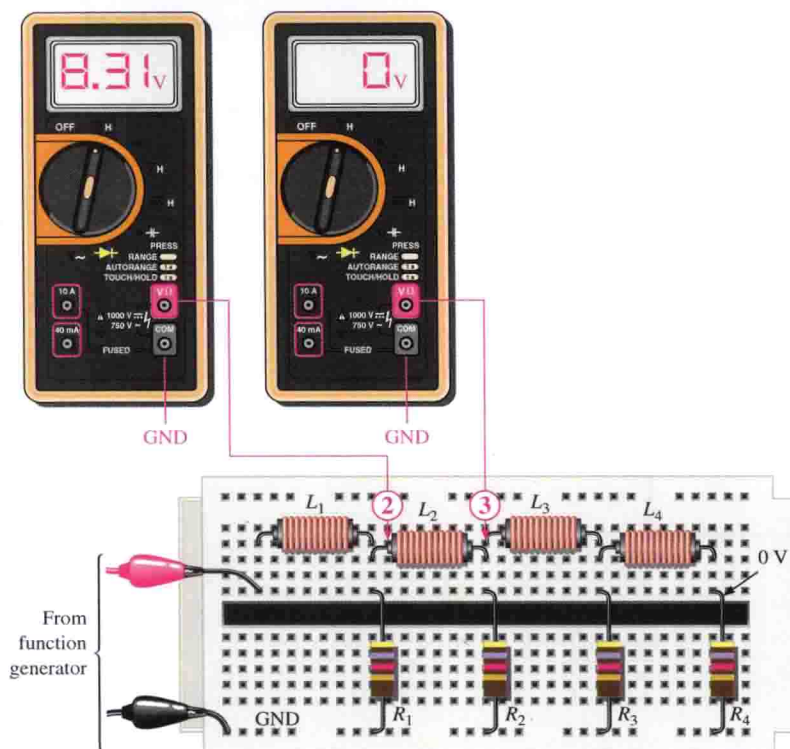
► FIGURE 10-1



► FIGURE 10-7



(a) Scope shows the correct voltage at the input.



(b) A zero voltage at point ③ indicates the fault is between point ③ and the source. A reading of 8.31 V at point ② shows that L_2 is open.

▲ FIGURE 10-43