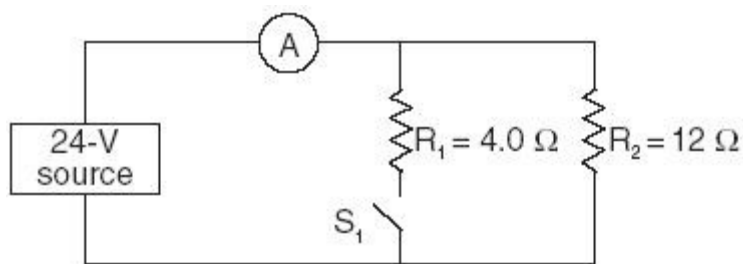


Student Name:**Grade: 10****Test Name:** Conceptual Physics Electricity and Magnetism Unit Practice
Exam Part II

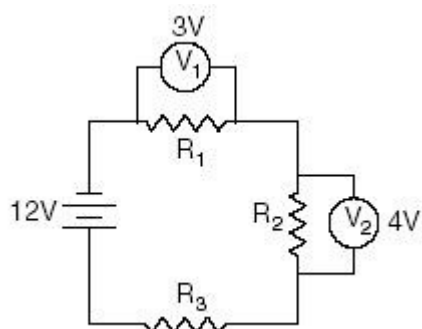
1. If a 15-ohm resistor is connected in parallel with a 30.-ohm resistor, the equivalent resistance is
- (a) $15\ \Omega$
(b) $2.0\ \Omega$
(c) $10.\ \Omega$
(d) $45\ \Omega$
2. If switch S_1 is closed, the equivalent resistance of the circuit is



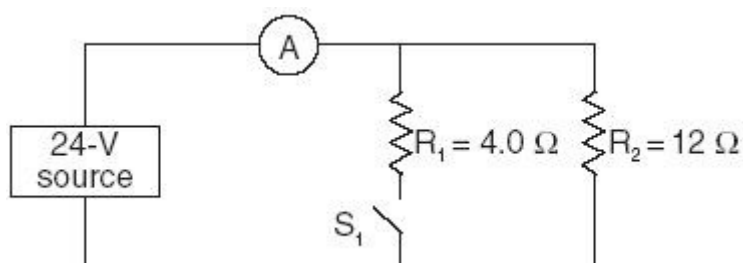
- (a) $8.0\ \Omega$
(b) $2.0\ \Omega$
(c) $3.0\ \Omega$
(d) $16\ \Omega$

3. The diagram below shows three resistors, R_1 , R_2 , and R_3 , connected to a 12-volt battery.

If voltmeter V_1 reads 3 volts and voltmeter V_2 reads 4 volts, what is the potential drop across resistor R_3 ?



- (a) 12 V
 (b) 5 V
 (c) 0 V
 (d) 4 V
4. If switch S_1 is open, the reading of ammeter A is



- (a) 0.50 A
 (b) 2.0 A
 (c) 1.5 A
 (d) 6.0 A

5. A current of 3.0 amperes is flowing in a circuit.

How much charge passes a given point in the circuit in 30. seconds?

- (a) 0.10 C
- (b) 10. C
- (c) 33 C
- (d) 90. C

6. A 10.-ohm resistor and a 20.-ohm resistor are connected in series to a voltage source.

When the current through the 10.-ohm resistor is 2.0 amperes, what is the current through the 20.-ohm resistor?

- (a) 1.0 A
- (b) 2.0 A
- (c) 0.50 A
- (d) 4.0 A

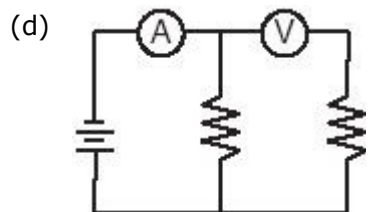
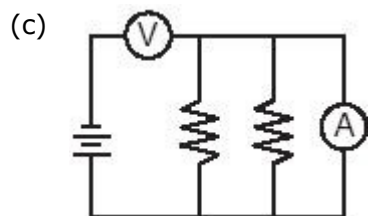
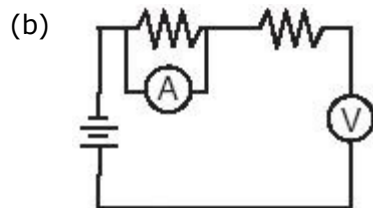
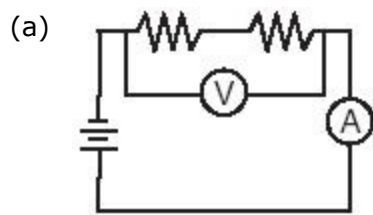
7. Two identical resistors connected in parallel have an equivalent resistance of 40. ohms.

What is the resistance of each resistor?

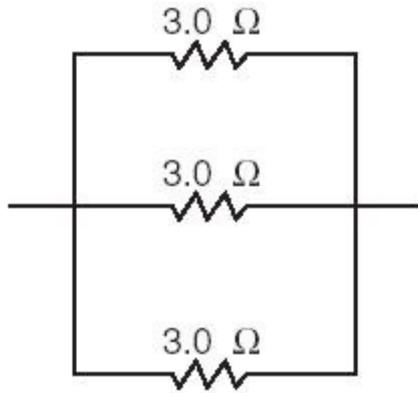
- (a) 20. Ω
 - (b) 40. Ω
 - (c) 80. Ω
 - (d) 160 Ω
-

8.

Which circuit diagram shows voltmeter V and ammeter A correctly positioned to measure the total potential difference of the circuit and the current through each resistor?



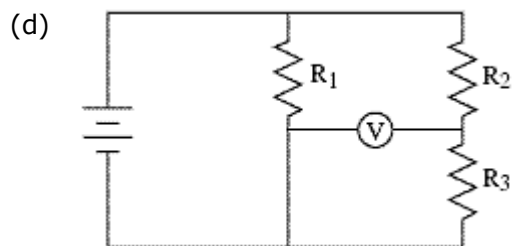
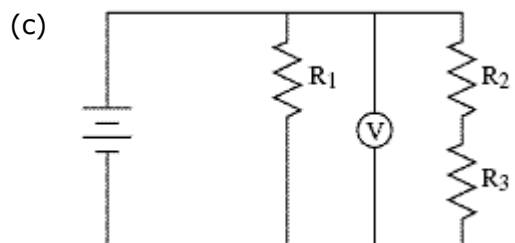
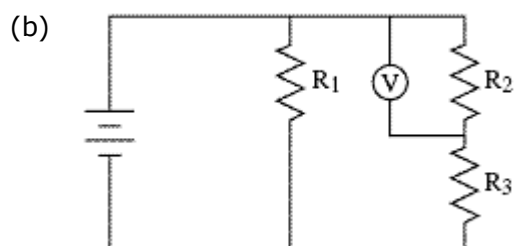
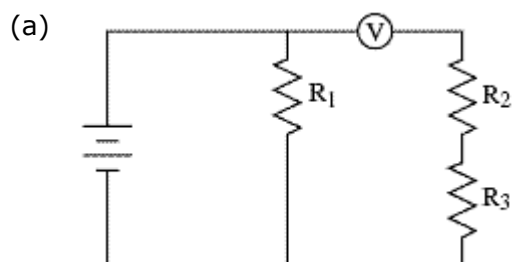
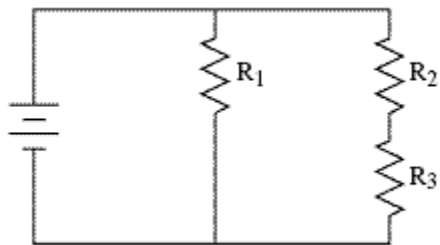
9. What is the total resistance of the circuit segment shown in the diagram below?



- (a) 1.0Ω
(b) 9.0Ω
(c) 3.0Ω
(d) 27Ω
-

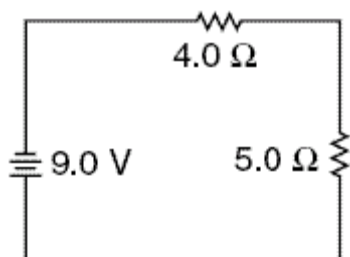
10. Which of the following diagrams shows a voltmeter correctly attached to measure the voltage drop in R_2 ?

The diagram below shows a circuit.



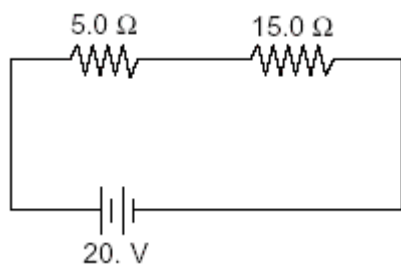
11. A 9.0-volt battery is connected to a 4.0-ohm resistor and a 5.0-ohm resistor as shown in the diagram below.

What is the current in the 5.0-ohm resistor?



- (a) 1.0 A
(b) 1.8 A
(c) 2.3 A
(d) 4.0 A
12. The energy used by a 100 watt lamp burning for 5 hours would be
- (a) 20 watt-hr
(b) 100 watt-hr
(c) 105 watt-hr
(d) 500 watt-hr
13. The diagram below shows two resistors connected in series to a 20.-volt battery.

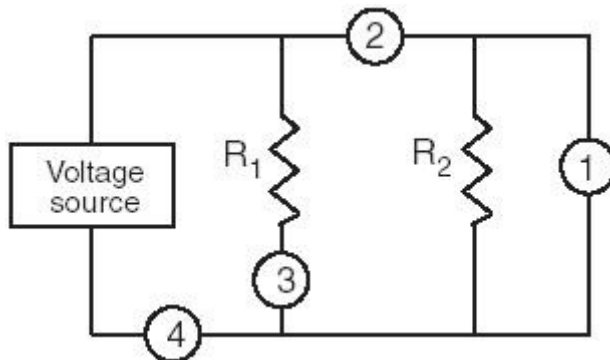
If the current through the 5.0-ohm resistor is 1.0 ampere, the current through the 15.0-ohm resistor is



- (a) 1.0 A
(b) 0.33 A
(c) 3.0 A
(d) 1.3 A

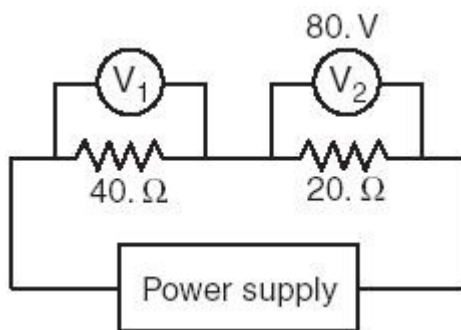
14. Two resistors are connected to a source of voltage as shown in the diagram below.

At which position should an ammeter be placed to measure the current passing only through resistor R_1 ?



- (a) 1
 (b) 2
 (c) 3
 (d) 4
15. In the circuit shown below, voltmeter V_2 reads 80. volts.

What is the reading of voltmeter V_1 ?



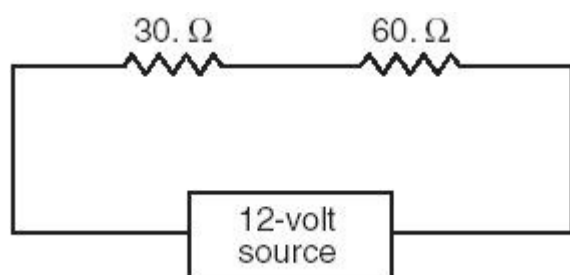
- (a) 160 V
 (b) 80. V
 (c) 40. V
 (d) 20. V

16. An incandescent light bulb is supplied with a constant potential difference of 120 volts.

As the filament of the bulb heats up, its resistance

- (a) increases and the current through it decreases.
 - (b) increases and the current through it increases.
 - (c) decreases and the current through it decreases.
 - (d) decreases and the current through it increases.
17. A 30.-ohm resistor and a 60.-ohm resistor are connected in an electric circuit as shown below.

Compared to the electric current through the 30.-ohm resistor, the electric current through the 60.-ohm resistor is



- (a) smaller.
 - (b) larger.
 - (c) the same.
18. The heating element on an electric stove dissipates 4.0×10^2 watts of power when connected to a 120-volt source.

What is the electrical resistance of this heating element?

- (a) 0.028W
- (b) 0.60W
- (c) 3.3W
- (d) 36W

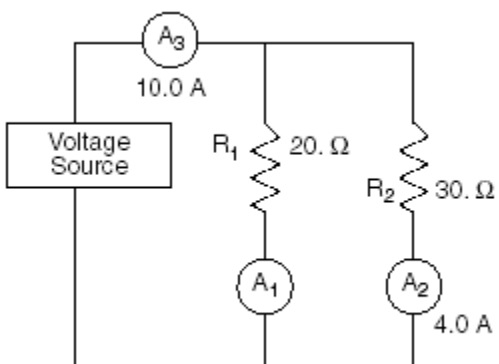
19. A potential drop of 50. volts is measured across a 250-ohm resistor.

What is the power developed in the resistor?

- (a) 0.20 W
 - (b) 5.0 W
 - (c) 10. W
 - (d) 50. W
-

Instructions for questions 20 through 21.

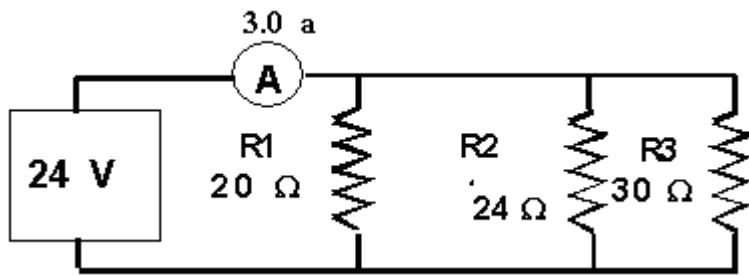
The diagram below shows two resistors and three ammeters connected to a voltage source.



20. What is the potential difference across the source?
- (a) 440 V
 - (b) 220 V
 - (c) 120 V
 - (d) 60. V
21. What is the current reading of ammeter A_1 ?
- (a) 10.0 A
 - (b) 6.0 A
 - (c) 3.0 A
 - (d) 4.0 A
-

Instructions for question 22.

Refer to the diagram below to answer the following question(s).



22. The equivalent resistance in the circuit is
- (a) 0.13 ohms
 - (b) 8.0 ohms
 - (c) 58 ohms
 - (d) 72 ohms