

AP PHYSICS

Name: _____

Period: _____ Date: _____

Points: 58 Score: _____ IB Curve: _____


DEVIL PHYSICS
BADDEST CLASS ON CAMPUS

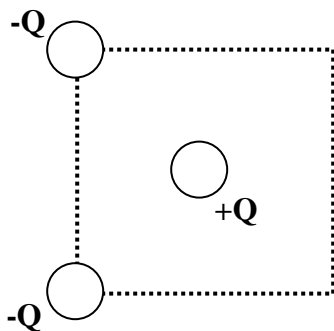
AP EXAM		CHAPTER TEST	
50 Multiple Choice • 45 Single Response • 5 Multi-Response	90 min, 1 point each	25 Multiple Choice • 22 Single Response • 3 Multi-Response	45 min
Free Response • 3 Short Free Response • 2 Long Free Response	90 min • 13 min ea, 7 pts ea • 25 min ea, 12 pts ea	Free Response • 2 Short Free Response • 1 Long Free Response	45 min • 12 min ea, 7 pts ea • 20 min ea, 12 pts ea

CHAPTER 16,18,19 TEST REVIEW

MULTIPLE CHOICE

1. (___/1) Materials in which the electrons are bound very tightly to the nuclei are referred to as
 - a. insulators
 - b. conductors
 - c. semiconductors
 - d. superconductors
2. (___/1) Sphere A carries a net positive charge, and sphere B is neutral. They are placed near each other on an insulated table. Sphere B is briefly touched with a wire that is grounded. Which statement is correct?
 - a. Sphere B remains neutral
 - b. Sphere B is now positively charged
 - c. Sphere B is now negatively charged
 - d. The charge on sphere B cannot be determined without additional information
3. (___/1) A positively charged object touches a neutral electroscope, the leaves separate. Then a negative object is brought near the electroscope, but does not touch it. What happens to the leaves?
 - a. They separate further
 - b. They move closer together
 - c. They are unaffected
 - d. Cannot be determined without further information
4. (___/1) Two charged objects attract each other with force F . What happens to the force between them if one charge is doubled, the other charge is tripled, and the separation distance between their centers is reduced to one-fourth its original value? The force is now equal to
 - a. $16F$
 - b. $24F$
 - c. $(3/8)F$
 - d. $96F$
5. (___/1) A piece of plastic has a net charge of $+2.00\mu\text{C}$. How many more protons than electrons does this piece of plastic have?
 - a. 1.25×10^{13}
 - b. 1.25×10^{19}
 - c. 2.50×10^{13}
 - d. 2.50×10^{19}
6. (___/1) The force between a $30\text{-}\mu\text{C}$ charge and a $-90\text{-}\mu\text{C}$ charge is 1.8 N . How far apart are they?
 - a. 1.9 m
 - b. 2.3 m
 - c. 3.7 m
 - d. 4.2 m

7. (___/1) Three identical point charges of $2.0 \mu\text{C}$ are placed on the x-axis. The first charge is at the origin, the second to the right at $x = 50 \text{ cm}$, and the third is at the 100 cm mark. What are the magnitude and direction of the electrostatic force which acts on the charge at the origin?
- 0.18 N left
 - 0.18 N right
 - 0.36 N left
 - 0.36 N right
 - zero



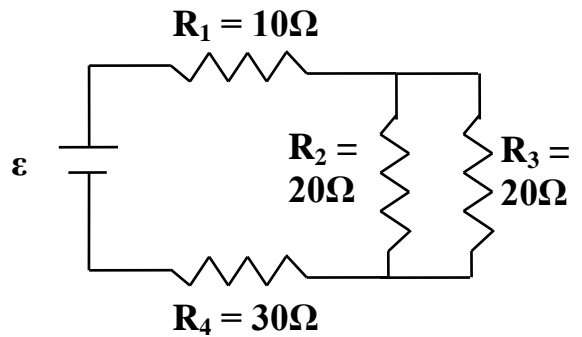
8. (___/1) A point charge of $+Q$ is placed at the center of a square, and a second point charge of $-Q$ is placed at the upper-left corner. It is observed that an electrostatic force of 2.0 N acts on the positive charge at the center. What is the magnitude of the force that acts on the center charge if a third charge of $-Q$ is placed at the lower-left corner?
- zero
 - 1.4 N
 - 2.8 N
 - 4.0 N
 - 5.3 N
9. (___/1) The resistance of a wire is
- proportional to its length and its cross-sectional area
 - proportional to its length and inversely proportional to its cross-sectional area
 - inversely proportional to its length and proportional to its cross-sectional area
 - inversely proportional to its length and its cross-sectional area

10. (___/1) The resistivity of most common metals
- remains constant over wide temperature ranges
 - increases as the temperature increases
 - decreases as the temperature increases
 - varies randomly as the temperature increases
11. (___/1) A kilowatt-hour is equivalent to
- 1000 W
 - 3600 s
 - $3,600,000 \text{ J/s}$
 - $3,600,000 \text{ J}$
12. (___/1) If the current flowing through a circuit of constant resistance is doubled, the power dissipated by that circuit will
- quadruple
 - double
 - decrease to one half
 - decrease to one fourth
13. (___/1) A coffee maker, which draws 13.5 A of current, has been left on for 10 min . What is the net number of electrons that have passed through the coffee maker?
- 1.5×10^{22}
 - 5.1×10^{22}
 - 8.4×10^{20}
 - 1.8×10^3
 - 8.1×10^3
14. (___/1) A light bulb operating at 110 V draws 1.40 A of current. What is its resistance?
- 12.7Ω
 - 78.6Ω
 - 109Ω
 - 154Ω
15. (___/1) A 120-m long copper wire (resistivity $1.68 \times 10^{-8} \Omega \cdot \text{m}$) has resistance 6.0Ω . What is the diameter of the wire?
- 0.065 mm
 - 0.65 mm
 - 0.65 cm
 - 0.65 m

16. (___/1) A 1.0-m length of nichrome wire has a radius of 0.50 mm and a resistivity of $100 \times 10^{-8} \Omega \cdot \text{m}$. If the wire carries a current of 0.50 A, what is the voltage across the wire?
- 0.0030 V
 - 0.32 V
 - 0.64 V
 - 1.6 V
17. (___/1) When resistor are connected in series,
- the same power is dissipated in each one
 - the potential difference across each one is the same
 - the current flowing in each is the same
 - more than one of the answers is true
18. (___/1) As more resistors are added in series to a constant voltage source, the power supplied by the source
- increases
 - decreases
 - does not change
 - increases initially and then starts to decrease
19. (___/1) When resistors are connected in parallel, we can be certain that
- the same current flows in each one
 - the potential difference across each is the same
 - the power dissipated in each is the same
 - their equivalent resistance is greater than the resistance of any one of the individual resistances
20. (___/1) As more resistors are added in parallel to a constant voltage source, the power supplied by the source
- increases
 - decreases
 - does not change
 - increases initially and then starts to decrease
21. (___/1) Four resistors of 12, 3.0, 5.0, and 4.0 Ω are connected in series. A 12-V battery is connected to the combination. What is the current through the battery?
- 0.10 A
 - 0.20 A
 - 0.30 A
 - 0.40 A
22. (___/1) A 22-A current flows into a parallel combination of 4.0 Ω , 6.0 Ω , and 12 Ω resistors. What current flows through the 12- Ω resistor?
- 3.7 A
 - 11 A
 - 7.3 A
 - 18 A
23. (___/1) The following three appliances are connected to a 120-V circuit: 1200-W toaster, 650-W coffee pot, and 600-W microwave. If all were operated at the same time, what total current would they draw?
- 4.0 A
 - 5.0 A
 - 10 A
 - 20 A
24. (___/1) A combination of a 2.0 Ω resistor in series with a 4.0 Ω resistor is connected in parallel with a 3.0 Ω resistor. What is the equivalent resistance?
- 2.0 Ω
 - 3.0 Ω
 - 4.0 Ω
 - 9.0 Ω

FREE RESPONSE

25. Use this figure to answer the following questions.



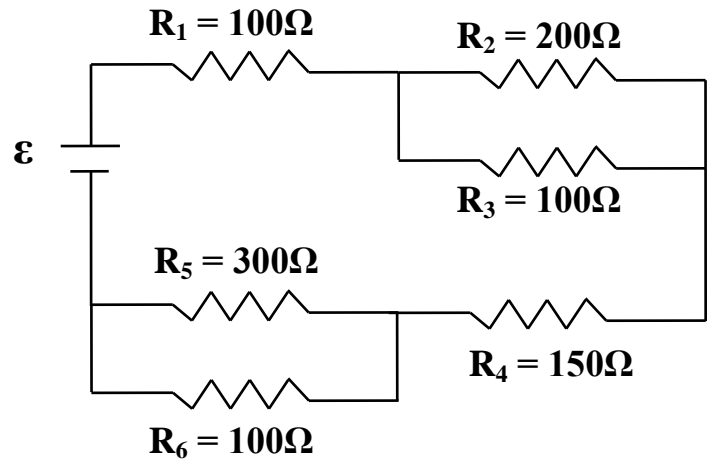
a. ($\underline{\quad}$ /3) What is the total resistance in the circuit above?

b. ($\underline{\quad}$ /3) If $\epsilon = 40\text{ V}$, what is the voltage across R_1 in the circuit above?

c. ($\underline{\quad}$ /3) If $\epsilon = 20\text{ V}$, what is the current through R_3 in the circuit above?

d. ($\underline{\quad}$ /3) If 1.5 A flows through R_2 , what is ϵ in the circuit above?

26. Use this figure to answer the following questions.

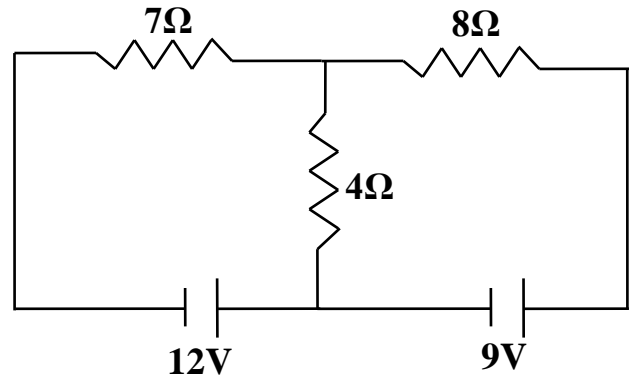


a. (___/5) What is the total resistance of the above circuit?

b. (___/3) If $\epsilon = 100\text{ V}$, what is the voltage across R_5 in the circuit above?

c. (___/3) If $\epsilon = 4.0\text{ V}$, what is the current through R_6 in the circuit above?

27. Use this figure to answer the following questions.



a. (___/1) State Kirchoff's junction rule

b. (___/1) State Kirchoff's loop rule

c. (___/5) Determine the current in the $4\text{-}\Omega$ resistor in the above figure.

d. (___/2) Determine the current in the $8\text{-}\Omega$ resistor in the above figure.

e. (___/2) Determine the current in the $7\text{-}\Omega$ resistor in the above figure.
