



Republic of the Philippines
Department of Education
REGION VIII- EASTERN VISAYAS
SCHOOLS DIVISION OF CALBAYOG CITY
CALBAYOG CITY NATIONAL HIGH SCHOOL
CALBAYOG CITY, SAMAR

GENERAL PHYSICS 2 SECOND SUMMATIVE EXAMINATION
THIRD QUARTER

Name: Shawn Michael A. Sudaria Grade & Section: STEM 12 - Bellatrix

Test I. Direction: Choose the BEST answer on each question and write it on a separate sheet. You may show your solution for the problem-solving questions.

1. It is a physical property of an object that causes it to be attracted toward or repelled from another charged object; each charged object generates and is influenced by a force called an electromagnetic force.
 - a. Nucleus
 - b. Electric charge**
 - c. Electric potential
 - d. Current
2. To start a car engine, the car battery moves 3.75×10^{21} electrons through the starter motor. How many coulombs of charge were moved?
 - a. -600 C**
 - b. -400 C
 - c. -500 C
 - d. -100 C
3. Which of the following does not describe a capacitor as an electrical device? It stores charge and electrical potential energy.
 - a. It is manufactured in many sizes and shapes.
 - b. It is used to smooth out unwanted fluctuations due to power surges in electronic circuits.
 - c. It allows current to pass through in any condition.**
4. Two capacitors X and Y of capacitances 2 F and 4 F respectively are connected in series with a 12V battery. Which of the following statements is CORRECT?
 - a. The effective capacitance is 6 F.
 - b. The potential difference across the capacitor X is 8 V.
 - c. Capacitors have the same charge of 36 C.
 - d. The potential difference across the capacitor Y is 12 V.**
5. Three capacitors $1.0\mu F$, $1.5\mu F$ and $2.0\mu F$ are connected in series. What is the equivalent capacitance of the capacitors?
 - a. $4.0\mu F$
 - b. $0.46\mu F$**
 - c. $2.17\mu F$
 - d. $0.25\mu F$
6. What is the potential difference across a capacitor on a $5\mu F$ when the charge of capacitor is $120\mu C$?
 - a. 21 V
 - b. 22 V
 - c. 23 V
 - d. 24 V**
7. Two capacitors $1.0\mu F$ and $0.5\mu F$ are connected in series to a 100V current supply. What is the amount of charge stored in the $1.0\mu F$?
 - a. $150\mu C$
 - b. $33\mu C$**
 - c. $100\mu C$
 - d. $50\mu C$



PROJECT ARICATA
Aggrandize Resources in
Competitive Academic Training
and Administration

Tatak City High

8. Which of the following statements described a charge on capacitors P, Q and R as shown in Figure 17.1?

- The charge in R is more than the charge in P and Q
- The charge in Q is more than the charge in P and R
- The charge in P is more than the charge in Q and R
- The total charge in Q and R is more than the charge in P.

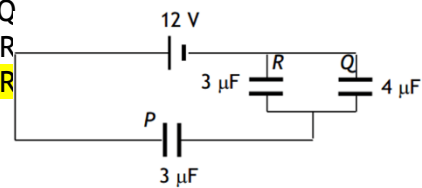


FIGURE 17.1

9. What is the equivalent capacitance of the combination in Figure 17.5 if $C = 2\mu F$.

- $8.0\mu F$
- $3.3\mu F$
- $1.5\mu F$
- $0.8\mu F$

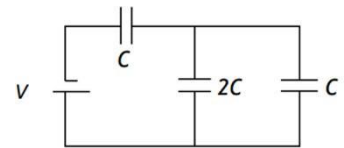
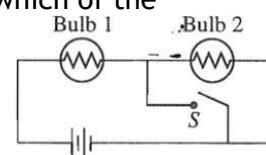


FIGURE 17.5

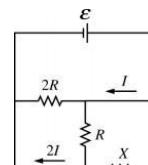
10. A 9.0-V battery moves 20 mC of charge through a circuit running from its terminal to its negative terminal. How much energy was delivered to the circuit?
- 2.2 mJ
 - 0.18 J
 - 0.020 J
 - $4.5 \times 10^3\text{ J}$
11. Increasing the separation of the two charge plates of a capacitor, which are disconnected from a battery, will produce what effect on the capacitor?
- Increase charge
 - Increase capacitance
 - Decrease charge
 - Decrease capacitance
12. A parallel plate capacitor has dimensions $4.0\text{ cm} \times 5.0\text{ cm}$. The plates are separated by a 1.0 mm thickness of paper (dielectric constant $k = 3.7$). What is the charge that can be stored on this capacitor, when connected to a 1.5 V battery? ($\epsilon_0 = 8.85 \times 10^{-12} \frac{\text{C}^2}{\text{Nm}^2}$)
- $20 \times 10^{-12}\text{ C}$
 - $4.8 \times 10^{-12}\text{ C}$
 - $20 \times 10^{-11}\text{ C}$
 - $9.8 \times 10^{-11}\text{ C}$
13. Inserting dielectric material between two charged parallel conducting plates, originally separated by air and disconnected from a battery, will produce what effect on the capacitor?
- Increase charge
 - Increase voltage
 - Increase capacitance
 - Decrease capacitance
14. If the voltage is increased and the resistance stays the same, current will_.
- Increase
 - Stay the same
 - Decrease
 - Not enough info
15. If the voltage stays the same and resistance is increased, current will_.
- Increase
 - Stay the same
 - Decrease
 - Not enough info
16. In a series circuit, which of the following is the same throughout the circuit?
- Resistance
 - Current
 - Voltage
 - Power
17. What voltage is needed to produce 2 A of current through a 10Ω resistor?
- 20 V
 - 5 V
 - 0.2 V
 - 2 V

18. Battery cells are connected in series to ____.
- Increase voltage output
 - Increase current capacity
 - Decrease voltage output
 - Decrease current capacity
19. A current of 0.5 A flows in a circuit. Calculate the charge flowing through the circuit in one minute.
- 0.5 C
 - 120 C
 - 30 C
 - 15 C
20. Which of the following will increase the resistance of a wire?
- Using a thicker/wider wire
 - Increasing the temperature of the wire
 - Using a shorter wire
 - Using silver instead of copper
21. Which of the following factors would decrease the resistance through an electrical conductor?
- Decreasing the cross-sectional area of the cord
 - Increasing the resistivity
 - Increasing the cross-sectional area of the cord
 - Increasing the length of the cord
22. What is the current in a circuit with a 2Ω resistor followed by a 3Ω resistor that are both in parallel with a 5Ω resistor? The voltage supplied to the circuit is 5 V.
- 5 A
 - 2 A
 - 1.5 A
 - 1 A
23. By how much will resistivity change if resistance and length are constant, and cross-sectional area is doubled?
- The resistivity will be quadrupled
 - The resistivity will be halved
 - The resistivity will not change
 - The resistivity will double
24. Type of material for which ohm's law is not valid
- Ampere
 - Ohm
 - Nonohmic
 - Ohmic
25. Jhana was preparing to go on a hike in the woods. She gathered the equipment she would need and placed it on the kitchen counter. By chance, she placed her compass near an electric outlet. Although the compass was not moving, the compass needle turned because ____.
- The electric in the outlet produced a magnetic field
 - The compass could only be used outdoors
 - The kitchen counter was made of a magnetic substance
 - The kitchen had a microwave over.
26. In a closed circuit containing one resistor and a battery, if the voltage in the battery increases, the current going through the resistor increases. Why does this occur?
- As the electrons are sped up, they bunch closer together.
 - As the electrons are pushed more by the battery, they move faster through the circuit.
 - As the electrons have more energy, they vibrate more rapidly.
 - As the distance around the circuit increases, the electrons take longer to travel around.
27. The circuit in the figure (to the right) contains two identical bulb lightbulbs in series with a battery. At first bulbs glow with equal brightness. When switch S is closed, which of the following occurs to the bulbs?



28. Three resistors are connected to an ideal battery, as shown in the figure below. The battery has an emf ε .

Two of the resistors have known resistances R and $2R$. The third resistor has unknown resistance X . The current in two of the branches is shown. What is the value of the unknown resistance X ?



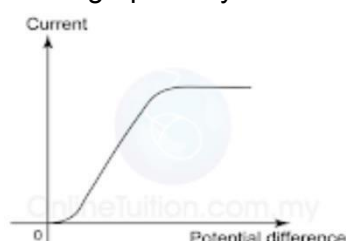
- a. $R/5$
- b. $R/2$
- c. $2R$
- d. R

29. Device used to measure potential difference

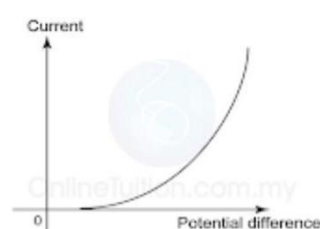
- a. Ammeter
- b. Barometer
- c. Odometer
- d. Voltmeter

30. Which of the graph obey the ohm's law?

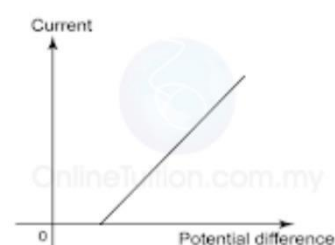
a.



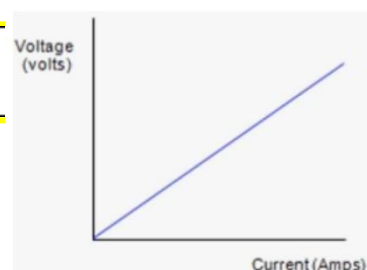
c.



b.



d.



31. Which device must be connected in parallel?

- a. Voltmeter
- b. Ammeter
- c. Ohmmeter
- d. Barometer

32. It is an energy supply by a battery/electrical source to a coulomb unit of charge.

- a. Potential difference
- b. Electromotive force
- c. Internal resistance
- d. Current

33. It is a work done or energy supplied to move a unit of charge from 1 point to another point in a closed circuit. This refers to_____.

- a. Internal resistance
- b. Electromotive force
- c. Potential difference
- d. Resistance

34. Instrument which transfers energy to electric charge in a circuit is_____.

- a. Battery
- b. Ammeter
- c. Voltmeter
- d. Galvanometer

35. If the direction of current is from positive to negative, the its is called_.

- a. Electronic current
- b. Positronic current
- c. Conventional current
- d. protonic current

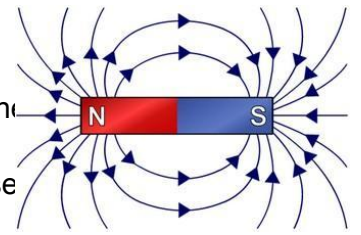
36. Are the magnetic field lines in the picture, correct?

a. Yes, because they point from north to south

b. Yes, because the north pole is on the left in all pictures.

c. No, because they point from north to south (they're supposed to go the other way)

d. No, because the North pole is not the left in all pictures (it's supposed to be on the right)



37. Which of the following actions would double the magnitude of the magnetic force per unit length between two parallel current-carrying wires? Choose all correct answers.

a. Double one of the currents.

b. Double both currents

c. Double the distance between them

d. None of the above

38. Magnetic flux density = 0.45 T, current = 1.37 A, length = 1.9 m, force on a conductor carrying a current

= ?

a. 0.0851

b. 0.317

c. 1.17

d. 0.106

39. Force on a conductor carrying a current = 5.37 N, magnetic flux density = 3.91 T, current = 4.33 A, length = ?

a. 0.0851

b. 0.317

c. 1.17

d. 0.106

40. The SI unit of magnetic field is_____.

a. Weber, Wb

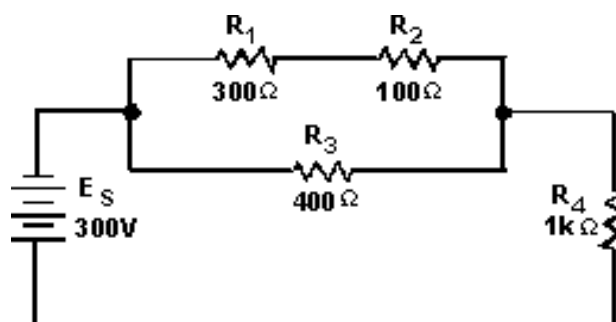
b. Tesla, T

c. Gauss, G

d. Farad, F

Test II. Direction: Solve the following problems and show your COMPLETE SOLUTION.

1. Solve for the total current and voltage drop of each resistor in the given circuit below. (5 points)



1)

$$R_1 = R_1 + R_2$$

$$= 300\Omega + 100\Omega$$

$$= 400\Omega$$

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_p} = \frac{1}{100\Omega} + \frac{1}{400\Omega}$$

$$= \frac{2}{400\Omega}$$

$$R_p = \frac{400\Omega}{2}$$

$$= 200\Omega$$

$$R_{\text{Total}} = R_p + R_4$$

$$= 200\Omega + 1000\Omega$$

$$= 1200\Omega$$

Solving for the total Current

$$I_{\text{Total}} = \frac{V_{\text{Total}}}{R_{\text{Total}}}$$

$$= \frac{300V}{1200\Omega}$$

$$= 0.25A$$

Solving for the voltage drop

$$I_1 = I_2 = I_3$$

$$V_1 = I_1 R_1$$

$$= (0.25A)(300\Omega)$$

$$V_1 = 75V$$

$$V_2 = I_2 R_2$$

$$= (0.25A)(100\Omega)$$

$$V_2 = 25V$$

$$I_1 = I_4$$

$$V_4 = I_4 R_4$$

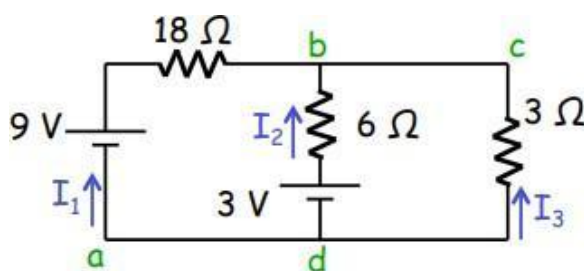
$$= (0.25A)(1000\Omega)$$

$$V_4 = 250V$$

$$V_T = V_3 =$$

$$= 300V$$

2. Find the current through each of the batteries. (5 points)



$$\begin{aligned}
 2) \quad I_1 &= I_2 + I_3 \\
 9V - I_1(18\Omega) - I_2(3\Omega) - 0 &\rightarrow 9 - 18(I_2 + I_3) - 3I_3 = 0 \\
 3V - I_2(6\Omega) - I_3(3\Omega) &= 0 \\
 3 - 6I_2 - 3I_3 &= 0 \\
 7 \cdot 3I_3 &= -6I_2 \\
 -0.4 + 0.5I_3 &= I_2 \\
 9 - 18(I_2 + I_3) - 3I_3 &= 0 \\
 9 - 18I_2 - 18I_3 - 3I_3 &= 0 \\
 9 - 18I_2 - 21I_3 &= 0 \\
 9 - 18(-0.5I_3 + 0.5I_3) - 21I_3 &= 0 \\
 18 - 30I_3 &= 0 \\
 -30I_3 &= \frac{-18}{-30} \\
 I_3 &= 0.6A \\
 I_2 &= 0.5 + 0.5I_3 \\
 &= 0.5 + 0.5(0.6) \\
 &= 0.8A \\
 I_1 &= I_2 + I_3 \\
 &= 0.8 + 0.6 \\
 &= 1.4A
 \end{aligned}$$

Certified True and Correct:

LAZARO R. BINAY JR.
SST-II

Noted:

MARISH LOU G. FERNANDEZ
SST-III/STEM Department
Head



PROJECT ARICATA

Aggrandize Resources in
Competitive Academic Training
and Administration

Tatak City High