

Circuit Lab C KEY

CookiePie1

SSSS 2019

SECTION I [2 each] 20 pts total

1. I
2. C
3. E
4. A
5. J
6. H
7. B
8. G
9. D
10. F

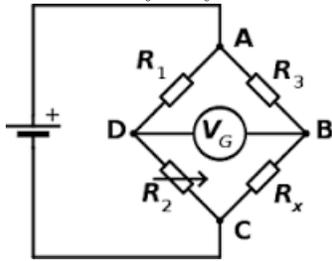
SECTION II [2 each] 30 pts total

1. Resistor	2. Potentiometer	3. Fuse
4. Electrolytic Capacitor (1.5 pts in only capacitor is written)	5. Transistor	6. Voltage Regulator
7. Relay	8. Thermistor	9. Photoresistor
10. Diode	11. 9V Battery (1.5 pts if only battery is written)	12. Inductor (1.5 pts for Coil)
13. Breadboard	14. Stepper Motor (1 pt if only motor is written)	15. Alligator Wires (1 pt if only Wire is written)

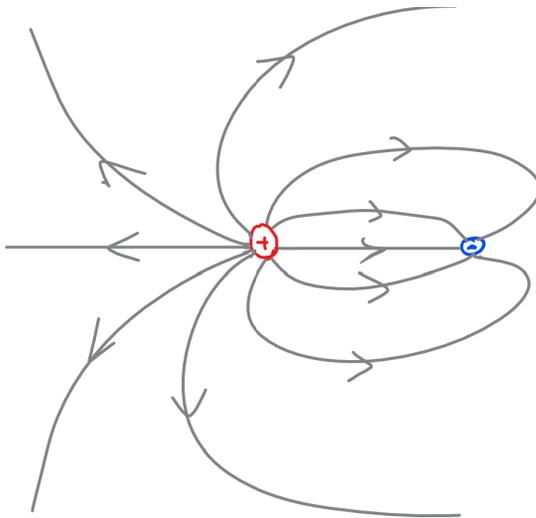
SECTION III - 72 pts total

1. $4.24 \times 10^{-19} N$ [3]
2.
 - a. 650Ω [2]
 - b. $0.013 s$ [2]
 - c. $0 A$ [1]
 - d. $2.5 V$ [2]
 - e. $0.0090 s$ [3**]

3. Answers may vary but it should be something along these lines [2]



4. a. Current reverses direction in AC [2]
 b. Answers may vary. Possible answers: [2]
 i. Reversing current increases likelihood of ventricular fibrillation
 ii. It's harder to let go of an AC voltage source due to muscle constriction coupled with reversing current

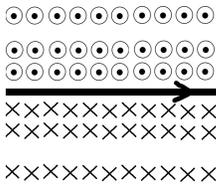


5. [3]

6. $1.21 pF$ or $1.21 \times 10^{-12} F$ [2]

7. a. (-) on the left and (+) on the right [1]
 b. Light Emitting Diode [1]

8. a. 13.4Ω [2]
 b. $0.160 A$ [2]
 c. $2.24 V$ [2**]



9. [2] - The number of dots and x's is not important; check for even horizontal spacing and that the dots and x's get farther apart the farther they get from the wire. Award 1 point if only one row of correct dots and x's are drawn, and award 0 points if the x's are on top and dots are on the bottom.

10. $0 N$ [2]

11. a. At P, out of the page and at Q, into the page [1]
 b. $0.612N \cdot m$ [3**]
 c. $1.75rad/s$ [4]
12. a. $8.00 \times 10^{-15}N$, towards the top of the page (or the top plate) [2]
 b. $7.55 \times 10^{-9}s$ [2]
 c. $0.113m$ [2]
 d. i. $9.87 \times 10^4m/s$ [2]
 ii. $1.00 \times 10^5m/s$ [2]
13. Electrostatic discharge can destroy sensitive electronics [2]
14. $1.60 \times 10^{-19}J$ or $1eV$ [2]
15.

A	B	Z
0	0	1
0	1	1
1	0	1
1	1	0

 [2]
16. a. 1 [2]
 b. 1 [2]
17. Magnetic monopoles don't exist. [1]
18. a. P side [2]
 b. Electrons diffuse from the N side to the P side. [2]
19. Wording may be different but: *In any junction, the sum of current flowing in is equal to the sum of current flowing out.* or $I_{in} = I_{out}$ [2]
20. 60 Hz [1]