Year 11 Physics NAME_____

Electrostatics Assignment

1.

a) What do an electron and proton have in common? /1

b) What do a proton and neutron have in common? /1

c) How much heavier than an electron is a neutron? /1

d) Describe how an object becomes charged electrostatically, including in your answer where the charge comes from. /2

e) State the forces that act between: positive to positive; negative to negative; negative to positive. /2

2. State Coulomb's Law. List what each letter in the formula represents. /4

3.

a) State what is meant by "the force between charges is proportional to the magnitudes of the charges". /1

b) State what is meant by "the force between charges is inversely proportional to the square of the distance between the charges". /2

4. Calculate the force acting between two charged objects $q_1 = +1x10^{-4}$ C and $q_2 = +1x10^{-5}$ C which are 2m apart. /3

5. Explain why a positively charged balloon can be attracted to a neutral ceiling. /2

6. You are having a dream in which a pink cat is charged +3.0mC and a green dog is charged -4.2mC.

a) They are 10m apart. Calculate the force which acts between them. /3

b) There is a flash and suddenly the distance between them is halved. Determine how many times greater the force is between them. /2

c) Again the distance between them is halved. Determine how many times greater (than the original amount) the force is now. /2

d) State and explain the pattern which is showing. /2

TOTAL /28