PHYS 315 HWK on Capacitors Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Capacitor, also known as a condenser is a device where electrical charge can be stored. Capacitance is the capacity of a capacitor to store charge. The capacitance, *C*, of a capacitor is defined as the magnitude of the charge stored on one plate, *q* per unit potential difference, *V*. 

http://edugen.wiley.com/edugen/courses/crs4957/halliday9118/halliday9088c25/image_n/nt0014-y.gif http://edugen.wiley.com/edugen/courses/crs4957/halliday9118/halliday9088c25/image_n/nt0016-y.gif

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1) In Fig. [25-31](http://edugen.wiley.com/edugen/courses/crs4957/halliday9118/halliday9088c25/halliday9118/halliday9088c25/halliday9088c25xlinks.xform?id=halliday9088c25-fig-0031), a 20.0 V battery is connected across capacitors of capacitances *C*1 = *C*6 = 3.00 *μ*F and *C*3 = *C*5 = 2.00*C*2 = 2.00*C*4 = 4.00 *μ*F. What are (a) the equivalent capacitance *C*eq of the capacitors and (b) the charge stored by *C*eq? What are (c) *V*1 and (d) *q*1 of capacitor 1, (e) *V*2 and (f) *q*2 of capacitor 2, and (g) *V*3 and (h) *q*3 of capacitor 3?

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2)  In Fig. [25-55](http://edugen.wiley.com/edugen/courses/crs4957/halliday9118/halliday9088c25/halliday9118/halliday9088c25/halliday9088c25xlinks.xform?id=halliday9088c25-fig-0055), *V* = 12 V, *C*1 = *C*5 = *C*6 = 6.0 *μ*F, and *C*2 = *C*3 = *C*4 = 4.0 *μ*F. What are (a) the net charge stored on the capacitors and (b) the charge on capacitor 4?

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3) In Fig. [25-51](http://edugen.wiley.com/edugen/courses/crs4957/halliday9118/halliday9088c25/halliday9118/halliday9088c25/halliday9088c25xlinks.xform?id=halliday9088c25-fig-0051), *V* = 9.0 V, *C*1 = *C*2 = 30 *μ*F, and *C*3 = *C*4 = 15 *μ*F. What is the charge on capacitor 4?

