

TAP 127- 3: More capacitors in series and parallel questions

1. Calculate the total capacitance of each of the following arrangements of capacitors:
 - (a) two capacitors of $100\ \mu\text{F}$ connected in series
 - (b) two capacitors of $100\ \mu\text{F}$ connected in parallel
 - (c) two capacitors, one of $100\ \mu\text{F}$ and the other of $200\ \mu\text{F}$ connected in series
 - (d) two capacitors, one of $100\ \mu\text{F}$ and the other of $200\ \mu\text{F}$ connected in parallel
 - (e) two capacitors, one of $100\ \mu\text{F}$ and the other of $4700\ \mu\text{F}$ connected in parallel with the combination connected in series with another capacitor of capacitance $4700\ \mu\text{F}$

2. If you have several $2.0\ \mu\text{F}$ capacitors each capable of withstanding 240V without breakdown how would you assemble a combination having an equivalent capacitance of:
 - (a) $0.40\ \mu\text{F}$
 - (b) $1.2\ \mu\text{F}$,
each capable of withstanding 1000V ?

Answers and worked solutions

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- (a) 50 μF
- (b) 200 μF
- (c) 67 μF
- (d) 300 μF
- (e) 2400 μF (2375 μF)

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- (a) Five capacitors in series
- (b) Three parallel sets of five capacitors in series
(both can tolerate $5 \times 240\text{V} = 1200\text{V}$)

External references

This activity is taken from Resourceful Physics <http://resourcefulphysics.org/>