Question 641

Two concentric spherical shells of radii 10 cm and 5.0 cm are charged to a potential difference of 20 V. How much energy is stored in this spherical capacitor?
(a) $9.8*10**(-8)$ J .
(b) $5.4*10**(-9)$ J .
(c) $1.3*10**(-9)$ J.
(d) $3.1*10**(-7)$ J.
(e) $2.2*10**(-9)$ J.

Question 642

A parallel-plate capacitor (with plates A and B) has circular shape of radius 6.0 cm separated by 2.0 mm. Find the total charges on both plates (A and B) when a 12 V battery is connected.
(a)   600 pico-C
(b)   zero
(c)   700 pico-C
(d)   400 pico-C
(e)   10 pico-C

| 26-4   Capacitors in Parallel and in series |

Question 643

How many 60 micro F capacitors would need to be connected in series in order to store a charge of $2.0*10**-4$ C with a potential of 100 volts across the capacitors, see Figure (3)?

Figure # 3
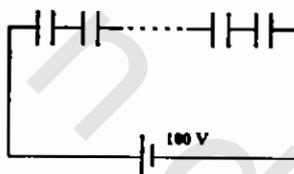
(a)   43.
(b)   30.
(c)   21.
(d)   70.
(e)   35.

Question 644

If Vab is equal to 50 V, find the charge stored and the potential difference across the 25 micro-F capacitor shown in Figure 5.
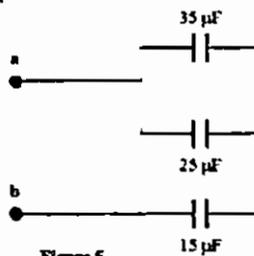

Figure 5

(a)   600 micro-C and 10 V
(b)   250 micro-C and 40 V
(c)   300 micro-C and 20 V
(d)   600 micro-C and 20 V
(e)   250 micro-C and 10 V

Question 645

A 30 micro-F capacitor charged to 3.0 V and a 50 micro-F capacitor charged to 4.0 V are connected to each other, positive plate to positive plate and negative to negative. What is the charge on the 50 micro-F capacitor after the two are so connected and equilibrium is reached?

(a)   320 micro-C
(b)   157 micro-C
(c)   290 micro-C
(d)   109 micro-C
(e)   181 micro-C

Question 646

Fifty capacitors of equal capacitance are connected in parallel. The equivalent capacitance of the combination is 120 micro-F. What is the capacitance of each capacitor?

(a)   5.8   micro-F

(b)   60   micro-F

(c)   2.4   micro-F

(d)   0.42 micro-F

(e)   6.0   milli-F

Question 647

An isolated capacitor, C1 = 20.0 micro-F has a potential difference of 26.0 V. When an uncharged capacitor C2, of unknown value, is connected across C1, the potential difference becomes 16.0 V for both. What is the value of C2?

(a)   25.0*10**(-6) F.

(b)   12.5*10**(-6) F.

(c)   1.00*10**(-6) F.

(d)   10.2*10**(-6) F.

(e)   20.0*10**(-6) F.

Question 648

Calculate the total charge stored by a combination of three capacitors, 2.0*10**(-6) F, 4.0*10**(-6) F, and 6.0*10**(-6) F, when connected in series to a 10-V battery.

(a)   0.1*10**(-6) C.

(b)   11*10**(-6) C.

(c)   46*10**(-6) C.

(d)   0.9*10**(-6) C.

(e)   92*10**(-6) C.

26-04
Question 649
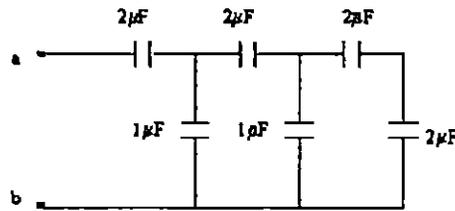The equivalent capacitance between points a and b in the combination of capacitors in figure 6 is:

FIGURE 6

(a) $1.0*10^{**}(-6)$ F.
(b) $3.0*10^{**}(-6)$ F.
(c) $2.0*10^{**}(-6)$ F.
(d) $1.5*10^{**}(-6)$ F.
(e) $0.5*10^{**}(-6)$ F.

26-04
Question 650
0.46-54%
Consider the circuit shown in figure (5). If C1 = 1 micro F, C2 = 6 micro F and C3 = 3 micro F, what is the charge on C3?
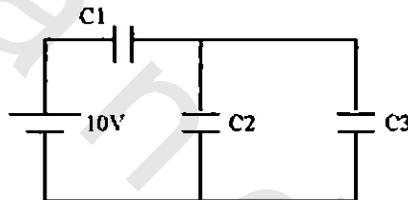

Figure 5

(a)   9 micro C.
(b)   6 micro C.
(c)   5 micro C.
(d)   3 micro C.
(e)   2 micro C.

26-04
Question 651
0.15-85%
A 2.5 micro F capacitor, C1, is charged to a potential difference V1 = 10 V, using a 10 V battery. The battery is then removed and the capacitor is connected to an uncharged capacitor, C2, with capacitance of 10 micro F. What is the potential difference across C1 and C2, respectively?
(a)   5 V,   5 V.
(b)   2 V,   2 V.
(c)   2 V,   8 V.
(d)   1 V,   9 V.
(e)   6 V,   6 V.

26-04

Question 652

A 2 micro-F and a 1 micro-F capacitor are connected in series and a potential difference is applied across the combination. The 2 micro-F capacitor has:
(a)   half the charge of the 1 micro-F capacitor.
(b)   zero of stored energy.
(c)   twice the potential difference of the 1 micro-F capacitor.
(d)   twice the charge of the 1 micro-F capacitor.
(e)   half the potential difference of the 1 micro-F capacitor.

26-04

Question 653

Three identical capacitors have a capacitance of $3.0*10**(-6)$F each. The equivalent capacitance of their series connection is "Cs" and the equivalent capacitance of their parallel connection is "Cp". The ratio Cs/Cp is:
(a)   1/4.
(b)   9.
(c)   1/9.
(d)   1.
(e)   2.

26-04
0.53-55%

Question 654

Figure 5 shows six capacitors each having a capacitance of 6-microFarad. The capacitance between points a and b is:

Figure 5

(a)   3 microFarad
(b)   4 microFarad
(c)   6 microFarad
(d)   1 microFarad
(e)   9 microFarad

26-04
0.53-53%

Question 655

Capacitor C1 has a capacitance of 4 micro-Farad. It is charged using a 100-volt battery. The battery is disconnected. Then, C1 is connected in parallel to another uncharged capacitor C2. Now, the potential difference between the plates of each capacitor is 40 V. What is the value of C2 ?
(a)   8 micro-Farad
(b)   6 micro-Farad
(c)   10 micro-Farad
(d)   2 micro-Farad
(e)   4 micro-Farad

26-04

Question 656
0.46-28%

Find the equivalent capacitance of three capacitors connected in series. Assume the three capacitors are: C1 = 2.00 micro-F, C2 = 4.00 micro-F and C3 = 8.00 micro-F.
(a)   3.01 micro-F.
(b)   15.4 micro-F.
(c)   1.14 micro-F.
(d)   0.88 micro-F.
(e)   26.1 micro-F.

26-04

Question 657
0.31-44%

In figure (8), find the total charge stored by the three capacitors if the potential difference V is 10.0 volts. Assume C1 = 10.0 micro-F, C2 = 5.00 micro-F and C3 = 4.00 micro-F.

Figure (8)
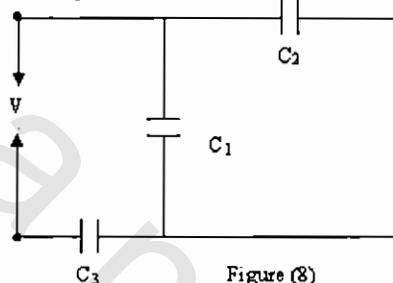
(a)   63.4 micro-C.
(b)   26.1 micro-C.
(c)   31.6 micro-C.
(d)   61.3 micro-C.
(e)   22.1 micro-C.

26-04

Question 658
0.42-53%

Two capacitors, C1 and C2, are connected in series and a potential difference is applied to the combination. If the capacitor that is equivalent to the combination has the same potential difference, then the charge on the equivalent capacitors is the same as:
(a)   The product of the charges on C1 and C2.
(b)   The charge on C1 or C2.
(c)   The sum of the charges on C1 and C2.
(d)   The difference of the charges on C1 and C2.
(e)   The ratio of the charges on C1 and C2.

26-04

Question 659
0.57-44%

A 10.0 micro-Farad capacitor is charged to a potential difference of 10.0 V. A 5.00 micro-Farad capacitor is charged to a potential difference of 5.00 V. The two charged capacitors are then connected to each other in parallel with positive plate connected to positive plate and negative plate connected to negative plate. What is the final common potential difference between the plates of each capacitor?
(a)   6.25 V
(b)   8.33 V
(c)   12.5 V
(d)   7.50 V
(e)   6.67 V

26-04
Question 660
0 65-33%
In figure 5, what is the electric charge on C4. $C1 = 20$, $C2 = 10$, $C3 = 14$, $C4 = 30$, and $Vo = 45$ V. Values of the capacitances are in micro-Farads.
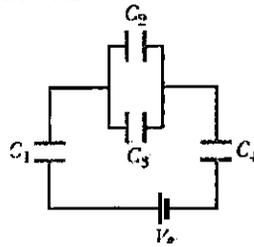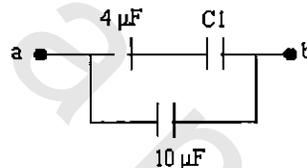

FIGURE 5

(a) 108 micro-Coulomb
(b) 262 micro-Coulomb
(c) 360 micro-Coulomb
(d) 330 micro-Coulomb
(e) 135 micro-Coulomb

26-04
Question 661
C 40-37%
The three capacitors in figure 5 have an equivalent capacitance of 12.4 micro-F, find the capacitance of C1.

Figure(5)

(a) 7.0 micro-F
(b) 6.0 micro-F
(c) 10 micro-F
(d) 4.0 micro-F
(e) 5.0 micro-F

26-04
Question 662
C 44-68%
In figure 6, a capacitor of capacitance $C = 9.0$ micro-F is charged to a potential difference $Vo = 10.0$ volts. The charging battery is disconnected and the capacitor is connected to uncharged capacitor of unknown capacitance Cx. The potential difference across the combination is reduced to $V = 3.0$ volts. Find the value of Cx.
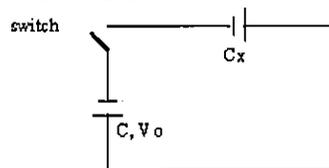

Figure (6)

(a) 3.0 micro-F.
(b) 11 micro-F.
(c) 8.0 micro-F.
(d) 21 micro-F.
(e) 42 micro-F.