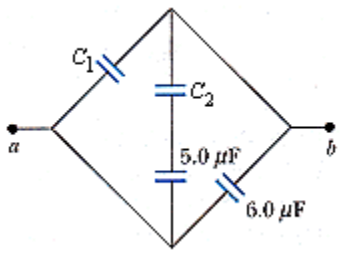
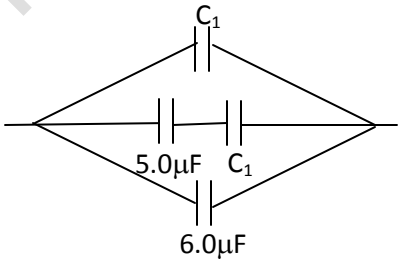
Q- Find the equivalent capacitance between points *a* and *b* in the combination of capacitors shown in Figure. C_1 = 2.0 μF and C_2 = 3.0 μF.



Looking minutely both terminals of C_1 and 6.0 μF capacitors are connected directly between the a and b. Similarly the series connection of 5.0 μF and C_2 is also connected directly to a and b. Thus the circuit is having C_1, 6.0 μF capacitors and the series combination of 5.0 μF and C_2 are in parallel as in figure. The equivalent capacitance of the series combination of 5.0 μF and C_2 is equal to (units are in μF)

$$\frac{C_2 * 5.0}{C_2 + 5.0}$$



Thus the equivalent capacitance of the circuit is given by

$$C = C_1 + 6.0 + \frac{C_2 * 5.0}{C_2 + 5.0}$$

Or $$C = 2.0 + 6.0 + \frac{3.0 * 5.0}{3.0 + 5.0} = 9.875\ \mu F$$