Example 41.6.
A 20-km single-phase transmission line having 0.823 cm diameter has two line conductors separated by 1.5 metre. The conductor has a resistance of 0.311 ohm per kilometer. Find the loop impedance of this line at 50 Hz.

Example 41.8.
A single-phase line has an impedance of $5 \angle 60^\circ$ and supplies a load of 120 A, 3,300 V at 0.8 p.f. lagging. Calculate the sending-end voltage and draw a vector diagram.

Example 41.9.
An overhead, single-phase transmission line delivers 1100 kW at 33 kV at 0.8 p.f. lagging. The total resistance of the line is 10 Ohms and total inductive reactance is 15 Ohms. Determine (i) sending-end voltage (ii) sending-end p.f. and (iii) transmission efficiency.

Example 41.36.
A 3-phase, 50-Hz, 220-kV transmission line consists of conductors of 1.2 cm radius spaced 2 meters at the corners of an equilateral triangle. Calculate the corona power loss per km of the line at a temperature of 20ºC and barometric pressure of 72.2 cm. Take the surface factors of the conductor as 0.96.

Example 8.1.
In a 33 kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of self-capacitance of each insulator, find (i) the distribution of voltage over 3 insulators and (ii) string efficiency.

Example 8.5.
An insulator string consists of three units, each having a safe working voltage of 15 kV. The ratio of self-capacitance to shunt capacitance of each unit is 8:1. Find the maximum safe working voltage of the string. Also find the string efficiency.

Example 8.14.
A 132 kV line with 1.956 cm dia. conductors is built so that corona takes place if the line voltage exceeds 210 kV (r.m.s.). If the value of potential gradient at which ionization occurs can be taken as 30 kV per cm, find the spacing between the conductors.

Example 8.17.
A 132 kV transmission line has the following data:

<table>
<thead>
<tr>
<th>Wt, of conductor (kg/km)</th>
<th>Length of span (m)</th>
<th>Ultimate strength (kg)</th>
<th>Safety factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>680</td>
<td>260</td>
<td>3100</td>
<td>2</td>
</tr>
</tbody>
</table>

Calculate the height above ground at which the conductor should be supported. Ground clearance required is 10 meters.

Example 8.18.
A transmission line has a span of 150 m between level supports. The conductor has a cross-sectional area of 2 cm$^2$. The tension in the conductor is 2000 kg. If the specific gravity of the conductor material is 9.9 gm/cm$^3$ and wind pressure is 1.5 kg/m length, calculate the sag. What is the vertical sag?

Example 8.27.
A transmission tower on a level ground gives a minimum clearance of 8 meters for its lowest conductor with a sag of 10 m for a span of 300 m. If the same tower is to be used over a slope of 1 in 15, find the minimum ground clearance obtained for the same span, same conductor and same weather conditions.