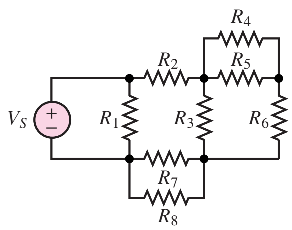

Figure P2.63

2.64 In the circuit of Figure P2.64, find the equivalent resistance looking in at terminals a and b if terminals c and d are open and again if terminals c and d are shorted together. Also, find the equivalent resistance looking in at terminals c and d if terminals a and b are open and if terminals a and b are shorted together.

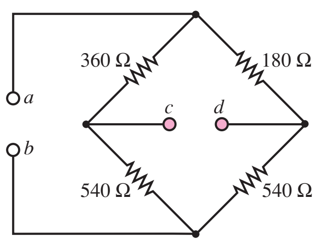

Figure P2.64

2.65 At an engineering site which you are supervising, a 1-horsepower motor must be sited a distance d from a portable generator (Figure P2.65). Assume the generator can be modeled as an ideal source with the voltage given. The nameplate on the motor gives the following rated voltages and the corresponding full-load current:

$$V_G = 110 \text{ V}$$
$$V_{M\,\min} = 105 \text{ V} \rightarrow I_{M\ \mathrm{FL}} = 7.10 \text{ A}$$
$$V_{M\,\max} = 117 \text{ V} \rightarrow I_{M\ \mathrm{FL}} = 6.37 \text{ A}$$

If $d = 150$ m and the motor must deliver its full-rated power, determine the minimum AWG conductors which must be used in a rubber-insulated cable. Assume that the only losses in the circuit occur in the wires.

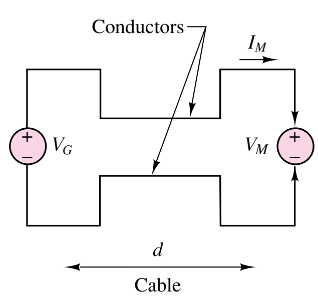

Figure P2.65

2.66 In the bridge circuit in Figure P2.66, if nodes (or terminals) C and D are shorted and

$$R_1 = 2.2 \text{ k}\Omega \qquad R_2 = 18 \text{ k}\Omega$$
$$R_3 = 4.7 \text{ k}\Omega \qquad R_4 = 3.3 \text{ k}\Omega$$

determine the equivalent resistance between the nodes or terminals A and B.

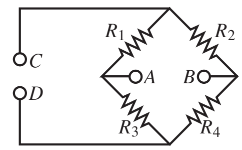

Figure P2.66

2.67 Determine the voltage between nodes A and B in the circuit shown in Figure P2.67.

$$V_S = 12 \text{ V}$$
$$R_1 = 11 \text{ k}\Omega \qquad R_3 = 6.8 \text{ k}\Omega$$
$$R_2 = 220 \text{ k}\Omega \qquad R_4 = 0.22 \text{ m}\Omega$$

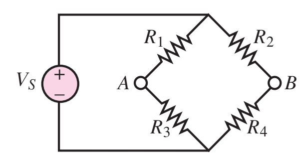

Figure P2.67

2.68 Determine the voltage between nodes A and B in the circuit shown in Figure P2.67.

$$V_S = 5 \text{ V}$$
$$R_1 = 2.2 \text{ k}\Omega \qquad R_2 = 18 \text{ k}\Omega$$
$$R_3 = 4.7 \text{ k}\Omega \qquad R_4 = 3.3 \text{ k}\Omega$$

2.69 Determine the voltage across R_3 in Figure P2.69.

$$V_S = 12 \text{ V} \qquad R_1 = 1.7 \text{ m}\Omega$$
$$R_2 = 3 \text{ k}\Omega \qquad R_3 = 10 \text{ k}\Omega$$

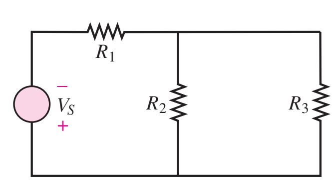

Figure P2.69