Problem D, Solution

This is a low voltage detect circuit.

As long as $v^+ > v^-$ the output of the comparator will be high (an open circuit). As soon as $v^+ < v^-$, the output goes low (short circuit).

The 5.2 volt source is regulated, so

$$v^- = 5.2 \frac{10240}{20240} = 2.63.$$

Nominally (if the battery is at 24 Volts)

$$v^+ = V_{batt} \frac{1500}{11500} = 3.13$$

The output of the comparator goes low when

$$v^+ = V_{batt} \frac{1500}{11500} < v^- = 2.63$$

$$V_{batt} < 20.2$$

We can replace this part of the circuit with a Low Voltage Detect block that feeds into the inhibit of the PWM.