

Solutions

2.1 B Divider: $12 \times (1.0/1.2) = 10.0$ V; the finite meter loads the source.

Compare the rejected options: 12.0 V; 9.6 V; 2.0 V; 11.0 V. Use the stated model and conditions.

2.2 B $1/\sqrt{1+(f/f_c)^2} = 1/\sqrt{2}$ at $f=f_c$, the -3 dB point.

Compare the rejected options: $1/2$; $1/e$; $9/10$; 1. Use the stated model and conditions.

2.3 10. $1 + R_2/R_1 = 1 + 9 = 10$.

2.4 False. Dead time removes events: $m = n/(1 + n\tau)$ falls as τ grows.

3.1 Let resistance r be in megohms. The first reading gives $V_{th} = 6(1 + r)$. The second gives $V_{th} = 9(3 + r)/3 = 9 + 3r$. Equating yields $r = 1$, hence $R_{th} = 1$ megohm and $V_{th} = 12$ V. Both readings are below the unloaded voltage. Award two divider equations, resistance and voltage/check.