(1) **Short Answer Section**

(a) symmetrical stripline, coaxial cable

(b) false

(c) series, parallel, diode, capacitor

(d) ground plane

(e) \( \frac{Z_0}{N} \)

(f) \( -\frac{5}{7} \)

(g) short, open

(2) **Descriptive Answer Section** (20 points)

Write a **concise** answer to each question in the spaces provided beneath each problem statement. **Note:** Correct answers that are extremely verbose will be penalized.

(a) **Microchip Interconnect:** Side-by-side chip interconnections greatly shorten the length of a transmission line. Shorter transmission lines mean less ringing, less dispersion, and less latency – all good for high-speed digital signal routing.

(b) **Signal Distortion on Transmission Lines:** Possible answers include latency, loss, load transformation, crosstalk, ringing, and intersymbol interference (ISI). Note that dispersion is the same thing as ISI.
(3) Reflection Sketches:

a)

\[ \text{time} \]

\[ 0 \quad T \quad 2T \quad 3T \quad 4T \quad 5T \quad 6T \]

\[ \uparrow \quad 8V \quad 1/2V \quad \downarrow -2V \]

b)

\[ \text{time} \]

\[ 0 \quad T \quad 2T \quad 3T \quad 4T \quad 5T \quad 6T \]

\[ \uparrow 16V \quad \downarrow -12V \quad \uparrow 3V \quad \downarrow -3/4V \]

c)

\[ \text{time} \]

\[ 0 \quad T \quad 2T \quad 3T \quad 4T \quad 5T \quad 6T \]

\[ \uparrow 16V \quad \downarrow -8V \quad \uparrow 2V \quad \downarrow -1/2V \quad \uparrow 1V \]

(4) Switching Network:

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