

Question 1. (Electronic Wiring)

1. Draw a **four-way junction**.
2. Draw a **single line** representation of a **sixty-four** (64) bit data bus.
3. What is the international standard code **letter** for a **digital** integrated circuit?

Question 2. (Logic Symbols)

Draw the IEEE standard symbol for:

1. A 2-input AND gate.
2. A 2-input NOR gate.
3. A single device consisting of *two* 2-input AND gates followed by a 2-input NOR gate.

Question 3. (Interconnection of Circuits)

1. Draw a **thru-hole** connection as used on a **two**-layer printed circuit board (PCB).
2. What is one advantage of a breadboard (proto-board) over a PCB?
3. Give one advantage of a PCB over a breadboard.
4. When you color-code a circuit, how many colors do you associate with one signal?

Question 4. (Protel Schematic and PCB Design)

1. What is the purpose of a **Netlist**?
2. If two components have many connections, where should the components be placed?
3. What is the standard **spacing** of IC pins?
4. Why are bus tracks **mitred**?