**COMPUTER NETWORKS**

**Task 1**

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**Answer 1:**In Cisco Packet Tracer, several types of routers are available, each with distinct characteristics and use cases. The main routers commonly included in the tool are:

* **Cisco 1841**: Basic router for small networks and labs.
* **Cisco 1941**: Slightly more advanced, good for small-to-medium businesses with security needs.
* **Cisco 2620XM**: Flexible, but outdated. Good for medium networks.
* **Cisco 2811**: Better performance for medium-to-large businesses with data and voice needs.
* **Cisco 2911**: High-performance, ideal for large businesses with security and VPN needs.
* **Cisco 4321**: Advanced enterprise router for high throughput and complex services.
* **Cisco 819**: Compact, rugged router for mobile and IoT applications.

**When to Use Each Router:**

* **Small Office or Lab**: Cisco 1841 or 1941 routers.
* **Medium-Sized Business**: Cisco 2620XM, 2811 routers.
* **Enterprise Network**: Cisco 2911 or 4321 for advanced security and high traffic handling.
* **Mobile/IoT Applications**: Cisco 819 ISR for wireless and LTE support.

Each router has its own strengths depending on the scale, needs, and complexity of the network you are designing.

**Answer 2:**

Here's a brief overview of Cisco Packet Tracer switches:

1. **2960 Switch**: Basic Layer 2 switch for small networks, ideal for LAN setups with basic switching capabilities.
2. **3560 Switch**: Layer 3 switch, supports routing and advanced features like VLANs and routing protocols (e.g., OSPF). Suitable for medium-sized networks with more complex setups.
3. **3650 Switch**: Higher-performance Layer 3 switch with additional features, like PoE (Power over Ethernet), suitable for larger enterprise networks needing advanced routing, QoS, and security.

**When to Use:**

* **2960**: Small networks requiring basic switching.
* **3560**: Medium networks needing VLANs, Layer 3 routing, and more advanced features.
* **3650**: Large enterprise networks with high throughput and advanced services (PoE, QoS, security).

**Answer 3:**

Here's a quick breakdown of the connection wires in Cisco Packet Tracer:

1. **Copper Straight-Through**: Connects different types of devices (e.g., PC to switch or router to switch).
2. **Copper Cross-Over**: Connects similar devices (e.g., PC to PC, switch to switch).
3. **Fiber Optic**: High-speed long-distance connection, usually between switches or routers.
4. **Serial DCE/DTE**: Used for WAN connections, connecting routers for point-to-point serial links.
5. **Phone Line**: Used for analog connections in VoIP setups.
6. **Coaxial**: Typically for older networks or cable internet connections.

**When to Use:**

* **Straight-Through**: PC to switch or router to switch.
* **Cross-Over**: PC to PC or switch to switch.
* **Fiber Optic**: High-speed, long-distance links.
* **Serial**: WAN connections between routers.
* **Phone Line**: VoIP setups.
* **Coaxial**: Older networks or cable internet.