1. Internet Protocol Stack: 5-layer Model

   (a).

   https://en.wikipedia.org/wiki/Internet_protocol_suite

   In Transport layer, it uses UDP header to identify the packet source and destination. In Network layer, it uses IP header to identify the packet source and destination. In Link layer, it uses Frame header to identify the packet source and destination.

   (b).

   https://en.wikipedia.org/wiki/Internet_protocol_suite

   https://en.wikipedia.org/wiki/Transmission_Control_Protocol

   https://en.wikipedia.org/wiki/Medium_access_control

   https://www.techopedia.com/definition/8866/physical-layer

   Application layer: HTTP

   HTTP is the foundation of data communication for the World Wide Web by exchanging and transferring hypertext which is structured text that uses logical links between nodes containing text.

   Transport layer: TCP

   TCP provides reliable, ordered, and error-checked delivery between applications running on hosts communicating by an IP network. It provides host-to-host connectivity at the Transport Layer of the Internet model.

   Network layer: IP

   IP has the task of delivering packets from the source host to the destination host based on the IP addressesin the packet headers. IP defines packet structures that encapsulate the data to be delivered. It also defines addressing methods that are used to label the datagram with source and destination information.

   Link layer: MAC

   MAC adds a frame check sequence to identify transmission errors, and forwards the data to the physical layer. Control when data is sent and when to wait to avoid congestion and collisions. When receiving data from the physical layer, MAC ensures data integrity before passing the data up to the higher layers.

   Physical layer: Bluetooth

   Bluetooth is a wireless technology standard for exchanging data over short distances and building personal area networks and is classified into Physical layer.

2. IP

   (a).

   https://www.ithome.com.tw/tech/92046

Theoretically, IPv4 provides 2^32 addresses and IPv6 provides 2^128 addresses.

(b).

http://dns-learning.twnic.net.tw/bind/intro6.html

AAAA should be added.

(c).

https://www.networkworld.com/article/2208835/lan-wan/ipv6-tunnel-basics.html

Tunneling uses relay routers to forward encapsulated IPv6 packets over IPv4 links. It uses unicast to create point-to-point links over the IPv4 backbone for transmission.

3. Wireshark

   (a) dns 192.168.0.1

   (b) dns.qry.name == "headhunt.com.tw". 202.153.190.77

   (c) ip.dst==202.153.190.77. TCP, HTTP

   (d) ip.dst==202.153.190.77 && frame contains "wireshark"

      Yes, I can. The protocol is HTTP

   (e) TLSv1.2 should be used to protect sensitive data.