**Question 1**  
Which three acronyms/initialisms represent standards organizations? (Choose three.)

* IANA (encircled) – Internet Assigned Numbers Authority oversees IP address allocation.
* TCP/IP – A protocol suite, not an organization.
* IEEE (encircled) – Institute of Electrical and Electronics Engineers develops standards like Ethernet.
* IETF (encircled) – Internet Engineering Task Force creates internet protocols.
* OSI – A model, not an organization.
* MAC – A type of address, not an organization.

**Question 2**  
What type of communication will send a message to all devices on a local area network?

* Broadcast (encircled) – Sends to all devices on the LAN.
* Multicast – Sends to a specific group, not all.
* Unicast – Sends to one device only.
* Allcast – Not a standard term.

**Question 3**  
In computer communication, what is the purpose of message encoding?

* To convert information to the appropriate form for transmission (encircled) – Encoding formats data for network travel.
* To interpret information – That’s decoding, not encoding.
* To break large messages into smaller frames – That’s segmentation.
* To negotiate correct timing – That’s flow control.

**Question 4**  
Which message delivery option is used when all devices need to receive the same message simultaneously?

* Duplex – Refers to two-way communication, not delivery type.
* Unicast – One-to-one delivery.
* Multicast – Group delivery, not all devices.
* Broadcast (encircled) – Sends to all devices at once.

**Question 5**  
What are two benefits of using a layered network model? (Choose two.)

* It assists in protocol design. (encircled) – Layers simplify creating compatible protocols.
* It speeds up packet delivery. – Not a direct benefit of layering.
* It prevents designers from creating their own model. – Designers can still create models.
* It prevents technology in one layer from affecting other layers. (encircled) – Layers isolate changes.
* It ensures a device at one layer can function at the next higher layer. – Not a benefit; layers are separate.

**Question 6**  
What is the purpose of protocols in data communications?

* Specifying the bandwidth – That’s a physical layer detail, not protocol purpose.
* Specifying the device operating systems – Protocols are OS-agnostic.
* Providing the rules required for a specific type of communication to occur (encircled) – Protocols define communication rules.
* Dictating the content – Content is user-defined, not protocol-driven.

**Question 7**  
Which logical address is used for delivery of data to a remote network?

* Destination MAC address – Used within a local network.
* Destination IP address (encircled) – Routes data across remote networks.
* Destination port number – Identifies applications, not networks.
* Source MAC address – Sender’s local address.
* Source IP address – Sender’s network address.

**Question 8**  
What is the general term that is used to describe a piece of data at any layer of a networking model?

* Frame – Specific to Layer 2.
* Packet – Specific to Layer 3.
* Protocol data unit (encircled) – Generic term for data at any layer.
* Segment – Specific to Layer 4.

**Question 9**  
Which two protocols function at the internet layer? (Choose two.)

* POP – Application layer protocol.
* BOOTP – Application layer for IP assignment.
* ICMP (encircled) – Internet layer for diagnostics (e.g., ping).
* IP (encircled) – Internet layer for addressing and routing.
* PPP – Data link layer protocol.

**Question 10**  
Which layer of the OSI model defines services to segment and reassemble data for individual communications between end devices?

* Application – User interface layer.
* Presentation – Data format layer.
* Session – Connection management layer.
* Transport (encircled) – Segments and reassembles data (e.g., TCP).
* Network – Routes data.

**Question 11**  
Which type of communication will send a message to a group of host destinations simultaneously?

* Broadcast – Sends to all devices.
* Multicast (encircled) – Sends to a specific group.
* Unicast – Sends to one device.
* Anycast – Sends to the nearest device in a group.

**Question 12**  
What process is used to receive transmitted data and convert it into a readable message?

* Access control – Manages network access.
* Decoding (encircled) – Converts received data to readable form.
* Encapsulation – Prepares data for sending.
* Flow control – Manages data rate.

**Question 13**  
What is done to an IP packet before it is transmitted over the physical medium?

* It is tagged with information guaranteeing reliable delivery. – Reliability is transport layer (e.g., TCP).
* It is segmented into smaller individual pieces. – Done at transport layer, not here.
* It is encapsulated into a TCP segment. – TCP is before IP.
* It is encapsulated in a Layer 2 frame. (encircled) – IP packets are framed for physical transmission.

**Question 14**  
What process is used to place one message inside another message for transfer from the source to the destination?

* Access control – Manages network access.
* Decoding – Extracts data.
* Encapsulation (encircled) – Wraps data in headers for transmission.
* Flow control – Regulates data flow.

**Question 15**  
A web client is sending a request for a webpage to a web server. From the perspective of the client, what is the correct order of the protocol stack that is used to prepare the request for transmission?

* HTTP, IP, TCP, Ethernet (encircled) – Correct order: Application (HTTP), Transport (TCP), Network (IP), Data Link (Ethernet).
* HTTP, TCP, IP, Ethernet – Correct order but not listed this way.
* Ethernet, TCP, IP, HTTP – Bottom-up, not preparation order.
* Ethernet, IP, TCP, HTTP – Incorrect sequence.