16.Explanation:

A **data packet** consists of two main parts:

1. **Header**
2. **Payload (Data)**

The **packet header** contains control information required for successful delivery of the packet.

Given information:

A – Protocol ✓

- Specifies the communication protocol used to handle the packet (e.g., TCP, UDP, HTTP, IP).
- This information is included in the header.

B – Destination Address ✓

- Indicates the address of the receiver (destination).
- Required by routers and switches to forward the packet to the correct device.
- This is included in the header.

C – Packet Number ✓

- Used to identify the order of packets.
- Helps in reassembling data correctly at the destination.
- This information is included in the header.

Therefore, all three (**Protocol, Destination Address, and Packet Number**) are contents of a **data packet header**.

✓ **Answer: (5) All A, B and C**

17. Why statement (3) is incorrect:

An amplifier or repeater is used to boost a signal **after** it has traveled some distance and suffered attenuation (loss of strength), not before it occurs. You cannot "recover" a signal before it has actually degraded. Amplifiers are placed at calculated intervals along the transmission medium to restore the weakened signal back to its original strength.

Breakdown of the correct statements:

- **(1) and (2):** Attenuation is the natural loss of signal strength as it travels through a medium. If a signal attenuates too much without being boosted, the data becomes unreadable or severely corrupted, meaning the received signal will look completely different from what was sent.

- **(4):** External environmental factors like lightning, moving machinery, or power lines create electromagnetic interference, which introduces noise into the signal.
- **(5):** Distortion happens because signals are often made of multiple frequencies. The physical properties of the medium (like capacitance and induction) cause different frequencies to travel at different speeds (delay distortion) and attenuate differently, changing the actual shape of the wave.

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Based on networking definitions, let's analyze the statements given in the image:

- **A is incorrect / incomplete as a definition for broadcasting:** Defining broadcasting as sending data to "one or more devices" is too vague—that could describe unicast (one-to-one) or multicast (one-to-many). In networking, **broadcasting** specifically means transmitting data from one device to **all** devices on the network.
- **B is correct: Multicasting** is a one-to-many transmission method where data is sent simultaneously from one sender to a specific group of interested destination devices (several devices), which can reside on the same network or across different networks.
- **C is correct: Broadcasting** sends data from one device to **all** devices. Depending on the type of broadcast (e.g., a limited broadcast vs. a directed broadcast), it can target all devices within the local network or a specific remote network.

Therefore, the correct statements are **B and C**.

Correct Option: (4) B and C only

20.

In **asymmetric encryption** (also known as public-key cryptography), a mathematically linked pair of keys is used: a public key and a private key. If data is encrypted using the public key, it is computationally impossible to decrypt it using that same public key; it can **only be decrypted** by the matching private key, which is kept secret by the owner.

Breakdown of the incorrect statements:

- **(2) is incorrect:** Firewalls are not *only* hardware. They can be software-based (like the built-in Windows Firewall on a PC) or a combination of both hardware appliances and software.
- **(3) is incorrect:** A digital signature reverses this process to ensure authenticity. The sender creates the signature by encrypting a data hash with their **private key**, and the recipient verifies it using the sender's **public key**.
- **(4) is incorrect:** Software piracy is the illegal copying, distribution, or use of copyrighted software—it is an intellectual property violation, not a malicious computer program. The description given fits a **Trojan horse**.
- **(5) is incorrect:** A simple parity check is *not* always accurate. It can only detect an **odd number** of bit errors (e.g., a single bit flip). If an **even number** of bits flip simultaneously