

COMPUTER NETWORK

UNIT-1

ASSIGNMENT

1

SECURE GOVERNMENT BUILDING NETWORK

Scenario: A government agency requires highly Secure Internet Communication.

Question:

a) Describe the role of encryption at the Physical Layer?

Ans: Encryption hides the data from others, even if someone taps the wires, it keeps the information safe while sending over cables or wireless.

b) Difference between tunneling and VPN.

Ans: Tunneling: Hides data inside another message, but may not be encrypted.

VPN: Make a secure, encrypted connection over the network.

c) Secure transmission media example:

↳ Fibre optic cable - Very safe and hard to hack

↳ Shielded cables - Reduce signal leaks

↳ Secure Wi-Fi (WPA3) - Safe wireless communication.

↳ Encrypted Ethernet (MACsec) - Encrypts wired data.

d) Error detection and Correction methods:

Detection:

↳ CRC (Cyclic Redundancy Check) - Finds error in data.

↳ Checksums - Checks if data changed during transfer.

Correction:

↳ ARQ - Resends data if there's an error.

↳ FEC - Adds extra data to fix errors resending.