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ASSIGNMENT – 1

DATA COMMUNICATION AND NETWORKS

LAYERS	MAIN FUNCTION	LAYER NUMBER	KEY DEVICES	ADDRESSING MODE	CORE FUNCTIONS	DATA UNIT
Physical layer	Transmits raw bits (0s and 1s) over a physical medium	Layer 1	Hub, Repeater	None	Bit synchronization, bit rate control, physical topology	Bits
Data link layer	Ensures error-free transfer of data frames between nodes	Layer 2	Switch, Bridge	MAC address	Framing, Physical addressing, error control, flow control	Frames
Network layer	Delivery of packets across different networks (host to host)	Layer 3	Router, Switch	IP address	Routing, logical addressing, packet forwarding, path determination	Packets

Layer	Description	Protocols / Layer #	Addressing / Function	Keywords
Transport Layer	Provides reliable delivery end to end data	TCP, UDP netBIOS, PPTP ... (layer 4)	Port number	Segmentation, segment reass.embly, port address ing, flow control.
Session Layer	manages and terminates session between two communicat -ing system	NetBIOS, PPTP ... (layer 5)	Session IDs Port-based associations	Session control Data dialog management
Presentation Layer	Translates, encrypts and compresses data for application layer	TLS/SSL, JPEG, GIF (layer 6)	No specific addressing but handles <-> data format	Data translation ASCII <-> EBCDIC ✗N
Application Layer	Provides network services to applications and acts as a user interface	HTTP, FTP, SMTP (layer 7)	Domain names, URLs email,	File transfer, email, vir -tual ter -minal access, directory services. Data