Layer		OSI protocols		Responsibilities		Scope	TCP/IP Model
# Name							
7	Application	FTAM, X.400, X.500, DAP, ROSE, RTSE, ACSE	NNTP, SIP, SSI, DNS, FTP, Gopher, HTTP, NFS, NTP, DHCP, SMPP, SMTP, SNMP, Telnet, RIP, BGP, BOOTP, TFTP, POP3, IMAP,	User Applications Services	User Data	Application Data	
6	Presentation		MIME, SSL, TLS, XDR, Shells and Redirectors				Application
5	Session	ISO/IEC 8327, X.225, ISO/IEC 9548- 1, X.235	Sockets. Session establishment in TCP, SIP, RTP, NetBIOS, RPC, Named Pipes	Session Establishment, Management and Termination	Sessions	Sessions between local or remote devices	
4	Transport	ISO/IEC 8073, TP0, TP1, TP2, TP3, TP4 (X.224), ISO/IEC 8602, X.234	TCP, UDP, SCTP	Process-Level Addressing; Multiplexing/Demultiplex ing; Connections; Segmentation and Reassembly; Acknowledgments and Retransmissions; Flow Control			Transport (TCP)
3	Network	(PLP), ISO/IEC 8878,	IP, IPsec, ICMP, IGMP, OSPF, IPv6; IP NAT; IPsec; Mobile IP; ICMP; IPX; DLC; PLP; Routing protocols such as RIP and BGP				Internet (IP)
2	Data Link	ISO/IEC 7666, X.25 (LAPB), Token Bus, X.222, ISO/IEC 8802- 2 LLC Type 1 and 2	PPP, SLIP, PPTP, L2TP			Low-level data messages between local devices	Network
1	Physical	X.25 (X.21bis, EIA/TIA-232, EIA/TIA-449, EIA- 530, G.703)		Encoding and Signaling; Physical Data Transmission; Hardware Specifications; Topology and Design	Bits	Electrical or light signals sent between local devices	