COMPUTER NETWORKS — UNIT 1 CHEAT SHEET

OSI & TCP/IP Models • Part 1 • Quick Exam Revision | TechBridgeHindi

Q1. Explain the ISO-OSI Reference Model. The ISO-OSI (Open Systems Interconnection) model is a conceptual seven-layer framework developed by ISO to standardize network communication.

Memory aids

Bottom to top: Please Do Not Touch Steve's Pet Alligator
Top to bottom: All People Seem To Need Data Processing

Seven layers and their functions

Layer	PDU	Main function / examples
7. Application	Data	Provides network services to user applications. Examples: HTTP, HTTPS, FTP, DNS, SMTP.
6. Presentation	Data	Data representation, translation, encryption/decryption and compression. Examples often associated with this layer: JPEG, MP3; TLS is commonly placed around this layer in teaching models.
5. Session	Data	Establishes, manages and terminates communication sessions; may provide dialog control and synchronization/checkpoints.
4. Transport	Segment / Datagram	End-to-end transport, segmentation and reassembly, and transport-level flow/error control. Examples: TCP, UDP.
3. Network	Packet	Logical addressing and routing between networks. Examples: IPv4, IPv6, ICMP. Router operates primarily at this layer.
2. Data Link	Frame	Framing, MAC addressing and node-to-node delivery over a link; error detection (e.g. CRC). Examples: Ethernet. Switch commonly operates at this layer.
1. Physical	Bit	Transmits raw bits as electrical, optical or radio signals. Examples: cables, hubs, repeaters and wireless physical transmission.

ARP clarification: ARP resolves an IPv4 address to a link-layer (MAC) address on a local network. It operates at the boundary between the Internet/Network and Link layers and is often described as a link-layer or Layer 2.5 protocol; it is not listed here as a core Network-layer routing protocol.

Encapsulation: At the sender, each layer adds its control information (headers and, where applicable, trailers) as data moves down the stack. **Decapsulation:** At the receiver, the corresponding information is processed and removed as data moves up the stack.

Exam presentation tip

Draw seven clearly labelled boxes. Group Layers 1–2 as Network Access / Media functions, Layer 3 as Network, Layer 4 as Transport, and Layers 5–7 as upper-layer services. Follow the terminology used in your course or question.

OSI MODEL vs TCP/IP MODEL

Q2. Differentiate between the ISO-OSI Reference Model and the TCP/IP Model.

Architectural comparison

Parameter	ISO-OSI model	TCP/IP model
Number of layers	7 layers	Usually shown as 4 layers
Nature	Conceptual reference model	Practical protocol suite / model used on the Internet
Development	Model defined before the protocols were mapped to it	Protocols existed and evolved with the model
Upper layers	Application, Presentation and Session are separate	These functions are grouped into the Application layer
Transport services	Can support connection-oriented and connectionless transport services	TCP is connection-oriented; UDP is connectionless
Lower layers	Data Link and Physical are separate	Combined as Network Access / Link layer in the 4-layer view

OSI to TCP/IP layer mapping

OSI model	TCP/IP model (4-layer view)
Application + Presentation + Session	Application
Transport	Transport
Network	Internet
Data Link + Physical	Network Access / Link

Remember: The OSI model is useful for understanding and troubleshooting network functions. The TCP/IP model describes the protocol architecture used by the Internet. Layer names and groupings can vary slightly across textbooks.

Resource: Quick Exam Revision • **Channel:** TechBridgeHindi
Next: Part 2 — Network Topologies & Transmission Media Cheat Sheet