

OSI Model & Its Layers in Computer Network

The OSI Model or the Open Systems Interconnection model is a conceptual framework which describes the functions of a networking system. It is used for the transfer of data over a network which moves through different layers.

From the competitive exam perspective, the OSI Model plays a very important part and questions from this topic may be asked in the [Computer Knowledge](#) section of the question paper.

An Introduction to the OSI Model

Before learning about the detailed structure of the model and its seven layers, given below are a few points of introduction related to the Open Systems Interconnection Model which one must know.

- In the 1970s the OSI Model was proposed and in the year 1984, it was published by the International Organisation of Standardization (ISO)
- Using this model, troubleshooting has become easier as the error can be detected at different levels
- This also helps in understanding the relationship and function of the software and hardware of a computer network
- The concept that the OSI Model should be a seven-layer structure, was proposed by Charles Bachman at Honeywell Information Systems
- The model initially did not gain much popularity as it could not support the Internet protocol suite which was not acceptable to a lot of IT Companies
- The seven layers of the structure are divided into two parts: the upper layer or the host layer and lower layer or the media layer

To learn in detail about the [Fundamentals of Computer](#), candidates can visit the linked article.

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7 Layers of the OSI Model

Discussed below is each stage of the Open Systems Interconnection Model in detail. Candidates are advised to go through these carefully to understand the structure and the functioning of the model in a systematic manner:

1. Physical Layer

- It is the bottom-most or the first layer of the OSI Model
- It comprises the raw data which is further transmitted to the higher layers of the structure
- Preparing the physical devices in the network and accepting the received data for transmission
- The termination of connection between two nodes of a network also takes place at this stage
- This layer converts the digital bits into electrical, radio, or optical signals

2. Data Link Layer

- Access to get the data is achieved at this layer
- It breaks the input data into frames which makes analysing the data easier
- Ensures that the data received is free of any errors
- It controls the flow of data in the stipulated time duration and along with a set speed of transmission
- The data is sent to the next layer in the form of packets which are then reviewed for further processing

3. Network Layer

- It acts as a network controller
- Transferring of variable data from one node to another, connected in a network, takes place at this layer
- Each node has a specific address and the network layer ensures that the data is sent to its destination address
- The data is sent in the form of fragments which are then connected to each other once the processing is done

4. Transport Layer

- The delivery of data packets is managed by the transport layer
- It manages the flow of data, segmentation and desegmentation and error control
- There are five classes of the transport protocol, starting from 0 and continuing till 4 (TP0 to TP4)
- Fragmentation and reassembly of data packets occur at this stage

5. Session Layer

- The connection between the computers connected in a network is managed at this layer
- Establishment, management and termination between the remote and local application takes place here
- Authentication and authorisation happen at this layer
- This layer can also terminate or end any session or transmission which is complete

6. Presentation Layer

- The data is converted into the syntax or semantics which an application understands
- Before passing on the data any further, the data is formatted at this stage
- Functions including compression, encryption, compatible character code set, etc. are also done at this layer of the model
- It serves as a data translator for the network

7. Application Layer

- The interaction with the user or the user application takes place at this stage
- When identifying communication partners, the application layer determines the identity and availability of communication partners for an application with data to transmit

On the whole, the entire process of transfer of raw data into processed data and finally to the user or the application can be done through this OSI model. It can detect errors, transmit the data and format it during the course of the above-mentioned seven layers.

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Internet	Difference Between MS Excel and MS Word
Difference Between Notepad and WordPad	Difference Between Virus and Worm

OSI Model - Sample Questions

Questions based on the OSI Model may be asked in the Computer Awareness section for the various competitive exams, especially Bank, SSC, RRB, Insurance, etc. To be able to answer these questions efficiently, one must comprehend the information discussed above carefully and prepare themselves well enough.

Since the Computer Knowledge section is scoring and easy in comparison to the other subjects included in the exam syllabus aspirants must try scoring the maximum marks here to improve their overall scores.

Thus, to help candidates with their [Government exams](#) preparation, given below are a few sample questions which will help them apprehend the standard of the examination and analyse the type of questions which may be asked.

Q 1. Routers work at which layer of the OSI Model?

1. Data Link Layer
2. Network Layer
3. Physical Layer
4. Application Layer
5. Transport Layer

Answer: (2) Network Layer

Q 2. What is the full form of OSI?

1. Operating Static Internet
2. Open Systems Interconnection
3. Operating System Interface
4. Open Statutory Interface
5. Oppressed System Interactions

Answer: (2) Open Systems Interconnection

Q 3. _____ Layer is responsible for Framing, Error Detection and Physical Addressing.

1. Network
2. Transport
3. Application
4. Data Link
5. Physical

Answer: (4) Data Link

Q 4. _____ layer defines how data is formatted, presented, encoded, and converted for use on the network.

1. Transport
2. Presentation
3. Application
4. Physical
5. Session

Answer: (2) Presentation

Q 5. How many layers are there in the Open Systems Interconnection (OSI) model?

1. Eight
2. Seven
3. Six
4. Five
5. Nine

Answer: (2) Seven

Q 6. Which is the first layer of the OSI Model?

1. Network Layer
2. Transport Layer
3. Presentation Layer
4. Physical Layer
5. Data Link Layer

Answer: (4) Physical Layer

Q 7. _____ layer converts raw bits to frames and frames to raw bits in the Open Systems Interconnection Model.

1. Session
2. Physical
3. Data Link
4. Transport
5. Network

Answer: (3) Data Link

Q 8. _____ is the process of detecting and correcting the error. While _____ is a mechanism to ensure the efficient delivery of Data.

1. Error control, Flow control
2. Process control, Network control
3. Session control, Flow control
4. OSI Control, Data control
5. None of the above

Answer: (1) Error control, Flow control

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