(1) Computer Networks — OSI Model

(1) Physical Layer — Cables, Topology, Transmission modes, Encoding, LAN, Devices, Modulation

(2) Data link → Stop and wait, Go Back and selective Repeat, MAC protocols, switching, Error control, Ethernet frame format.

(3) Network → IP addressing, Routing Protocols, IPv_4 header. IPv_6 Header.

(4) Transport layer → TCP, UDP, Headers

(5) Session layer

(6) Presentation layer

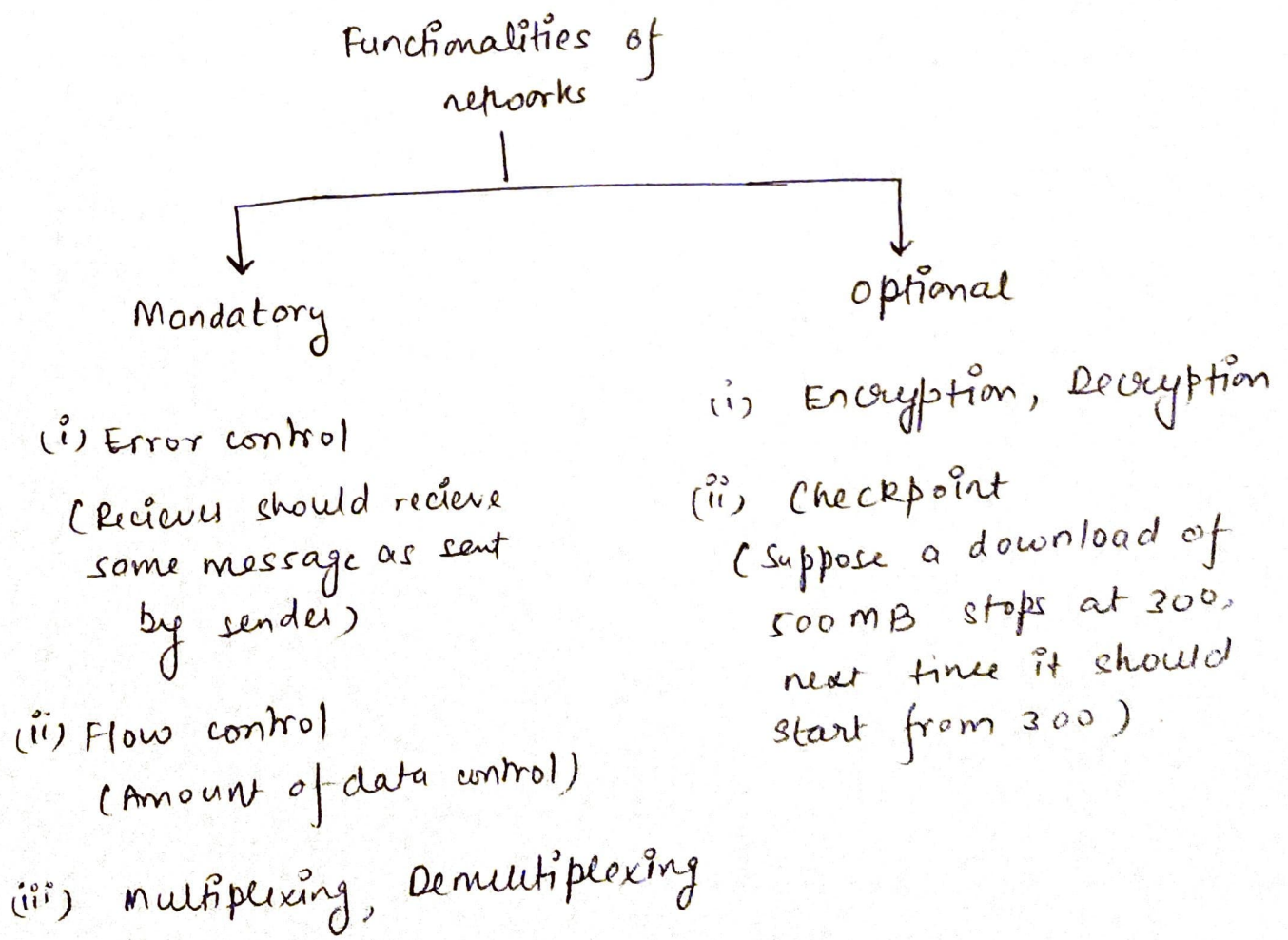(7) Application layer → DNS, HTTP, SMTP, FTP
port numbers

(8) Network Security.

(2) Introduction to Computer Networks

Main purpose of computer networks is to share data across devices.

Protocol

Sender —— connection —— Reciever

protocol

(m) ⟶ (m)
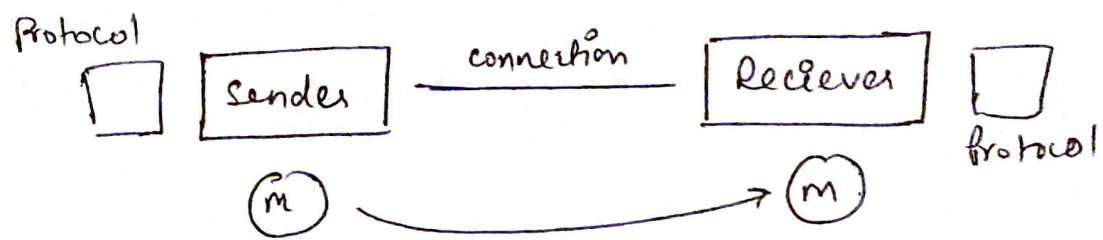
Message sent by sender should be understandable by Reciever. To ensure this, we need protocols - that run on both sides.

Connection with protocol is called communication.

Functionalities of networks

Mandatory

(i) Error control
(Recievers should recieve same message as sent by sender)

(ii) Flow control
(Amount of data control)

(iii) multiplexing, Demultiplexing

optional

(i) Encryption, Decryption

(ii) Checkpoint
(Suppose a download of 500mB stops at 300, next time it should start from 300)

All the functionalities are packed in a model.

→ OSI model (open systems Interconnection model)

→ In the OSI model, functionalities are converted into layers

Application
Presentation
Session
Transport
Network
Data link
Physical layer.

A message will pass through all these layers at both sender's and reciever's end.