Computer Networks CSE306

Lecture 0

Presented by: Dr. Amandeep Singh

Course details

- LTP – 3 0 0 [Three lectures & /week]

Text Book

DATA COMMUNICATION AND NETWORKING

By Behrouz Forouzan, Mcgraw Hill Education

Course Assessment Model

Marks break up*	
Attendance	5
CA (Two best out of three tasks)	25
MTE	20
ETE	50
Total	**100**

POLL 1

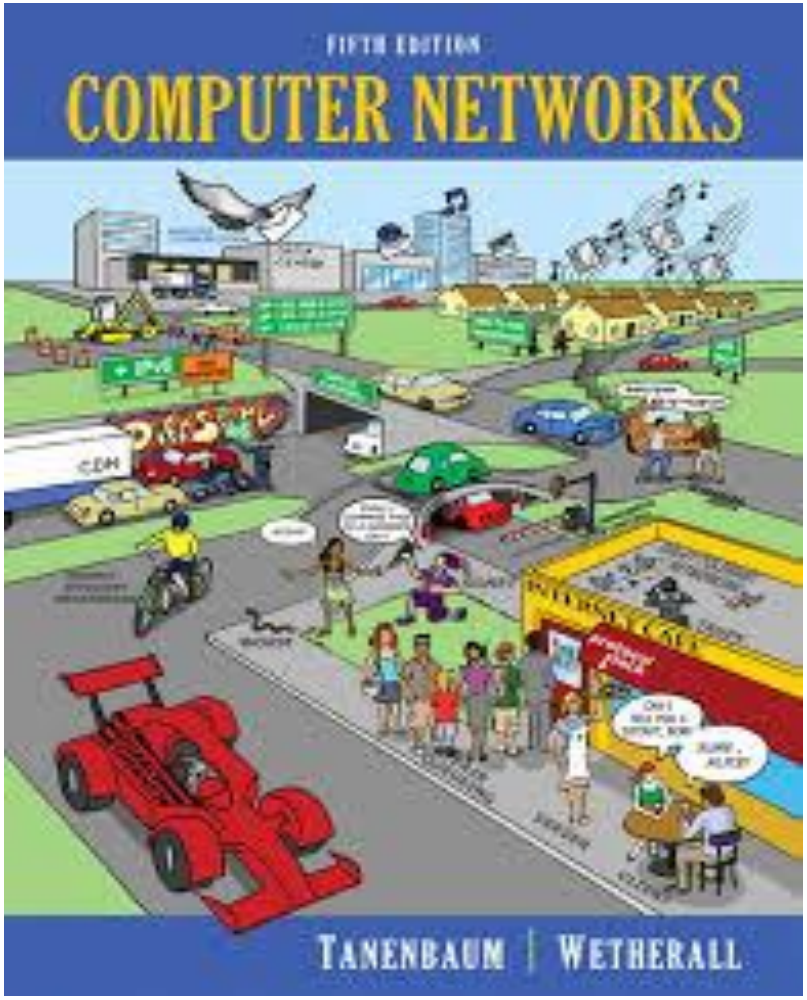
- The weightage of ETE component is

a) 20

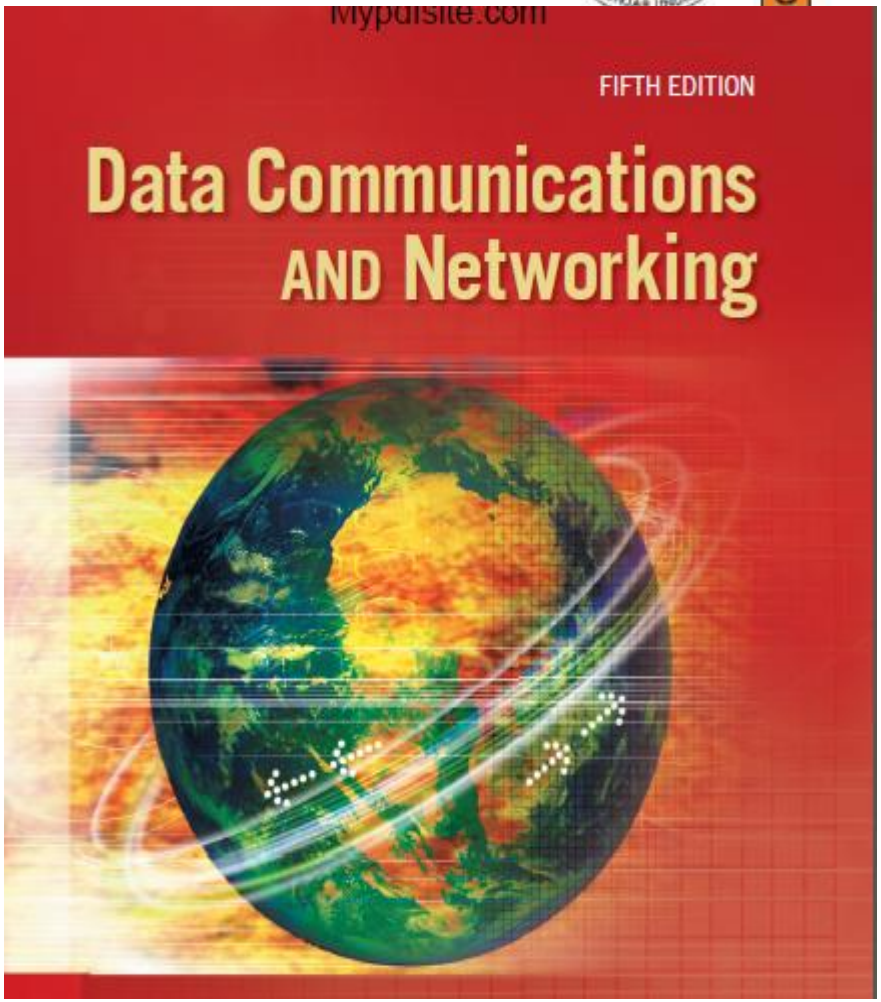
b) 50

c) 25

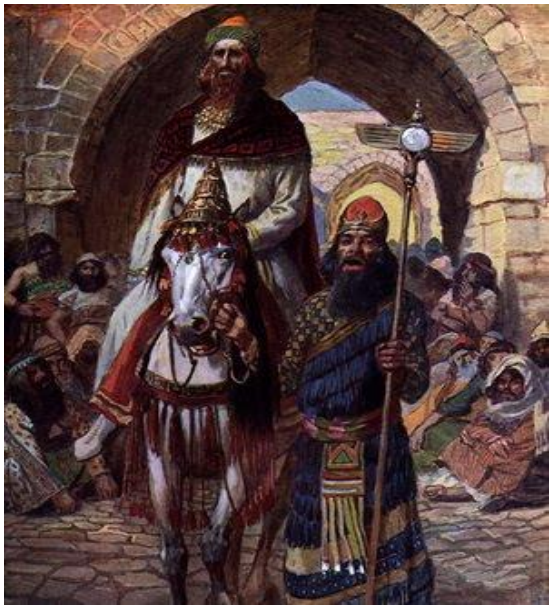
d) 30



Reference Book 1
Ed 5

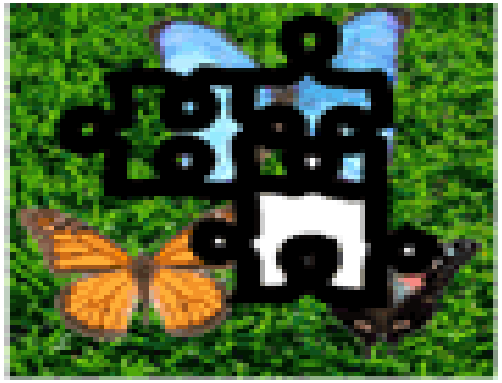


Text Book



OLD TIMES

NOW

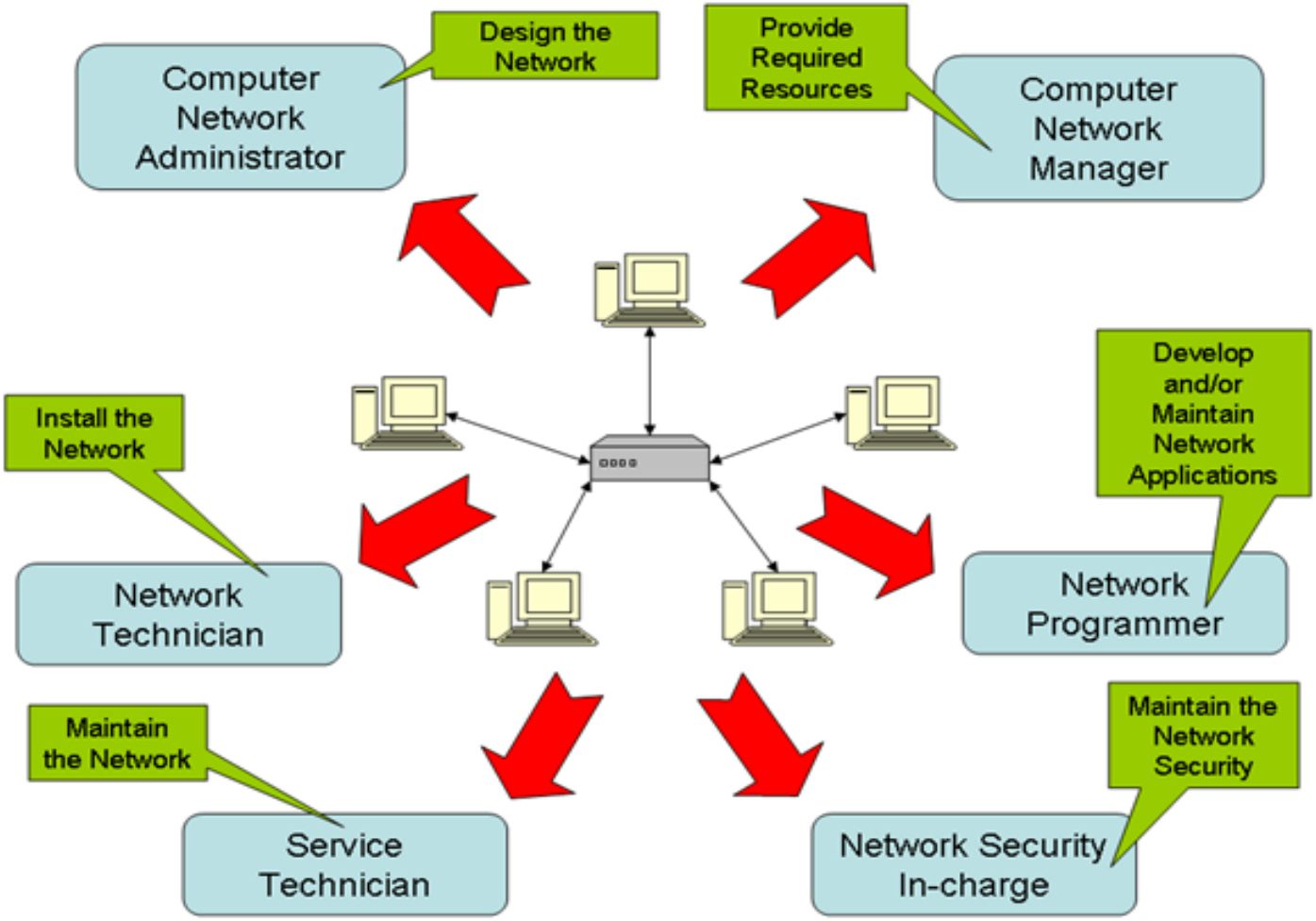


DVD

SATELLITE/CABLE/IP

OVER THE AIR

Why Study ?



(Career Avenues in Computer Networking)

Objective of Computer Networks

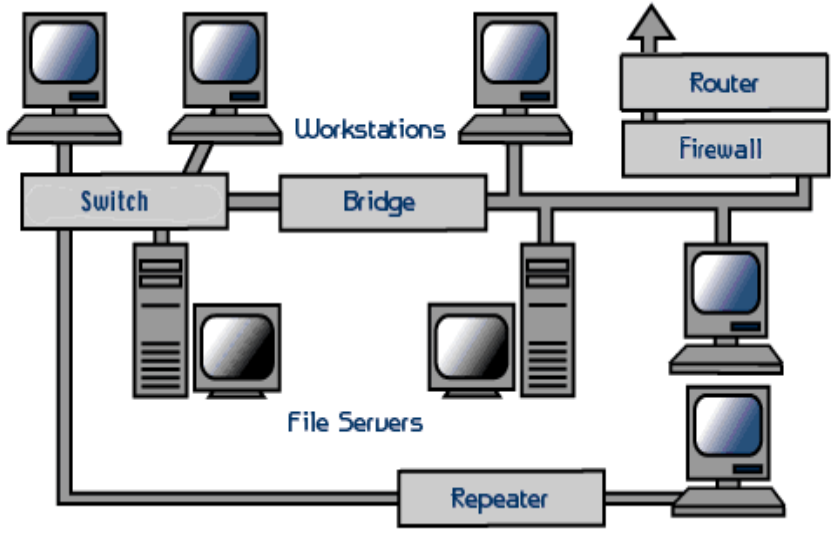
- Networking has revolutionized the way in which we ***WORK***, ***CONNECT*** and ***COMMUNICATE*** to the world.

Networking is about making connections and finding out what we can do to help each other.
It's about service.

MOMentity.com

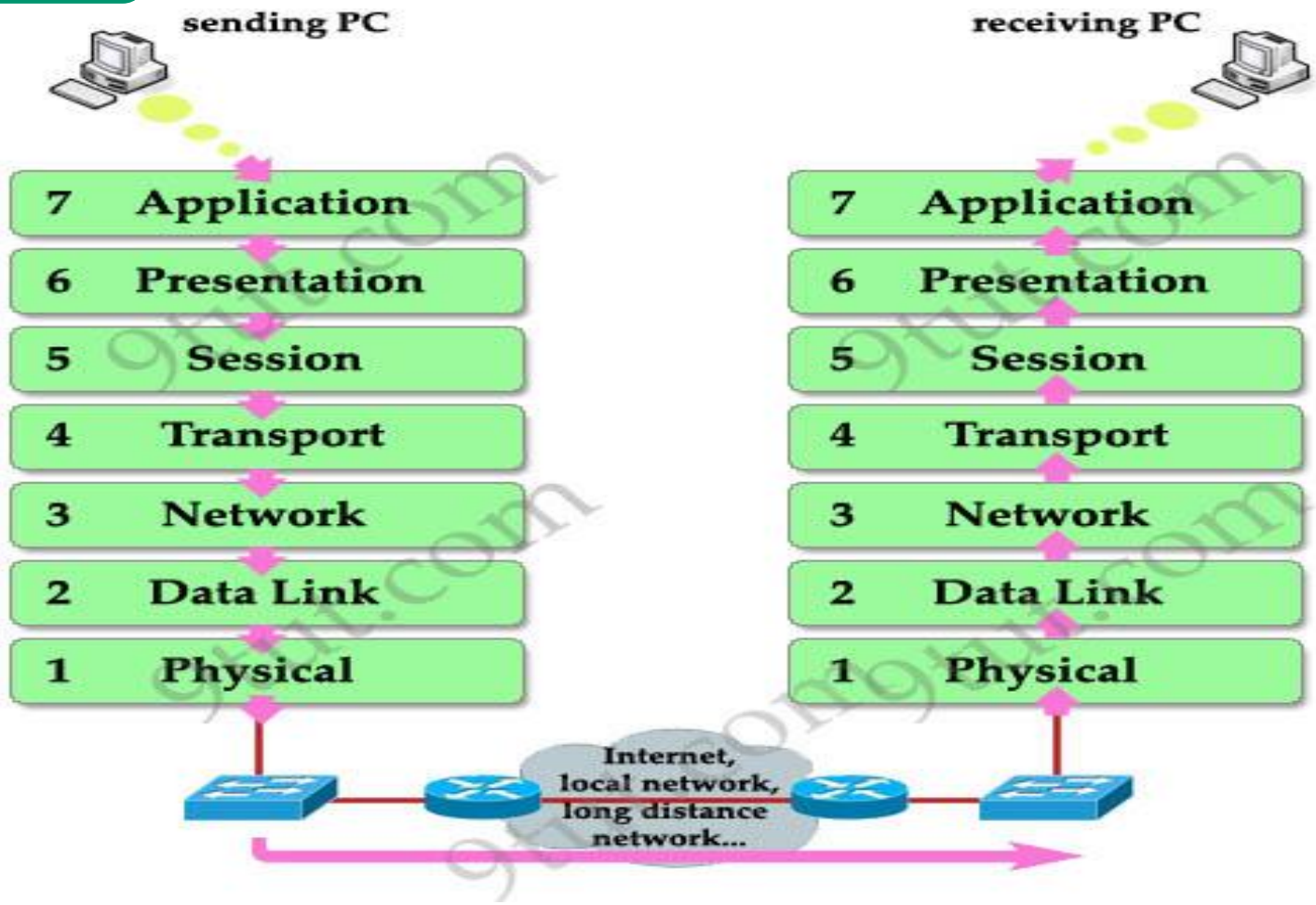
What Is Networking

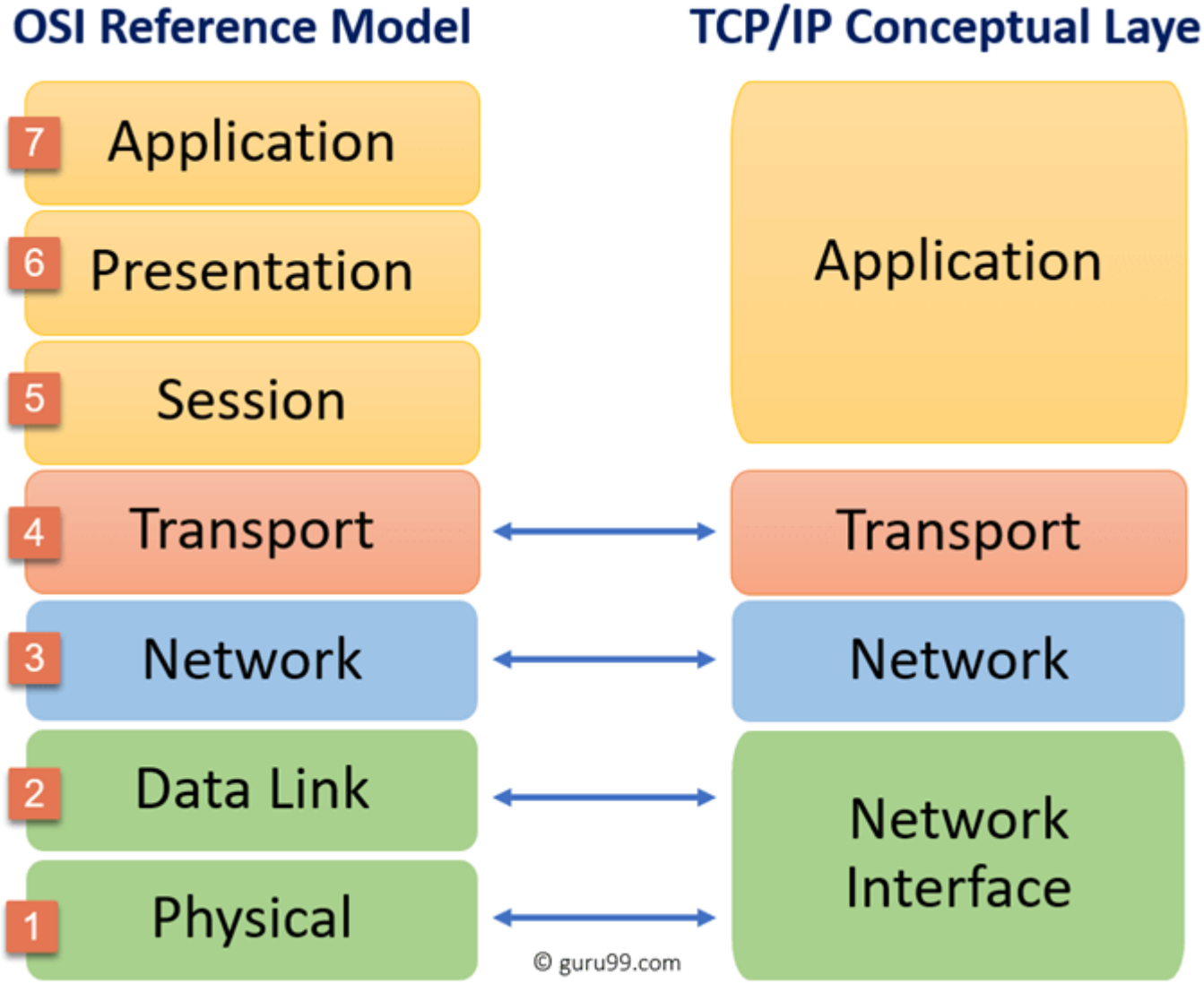
A computer **network** or data **network** is a telecommunications **network** that allows computers to exchange data.



OSI and TCP Model

Unit 1




OSI Reference Model
TCP/IP Conceptual Layers
7 Application
6 Presentation
5 Session
4 Transport
3 Network
2 Data Link
1 Physical
Application
Transport
Network
Network Interface
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POLL 2

Which of the following layers is merged in TCP/IP protocol

a) Session layer

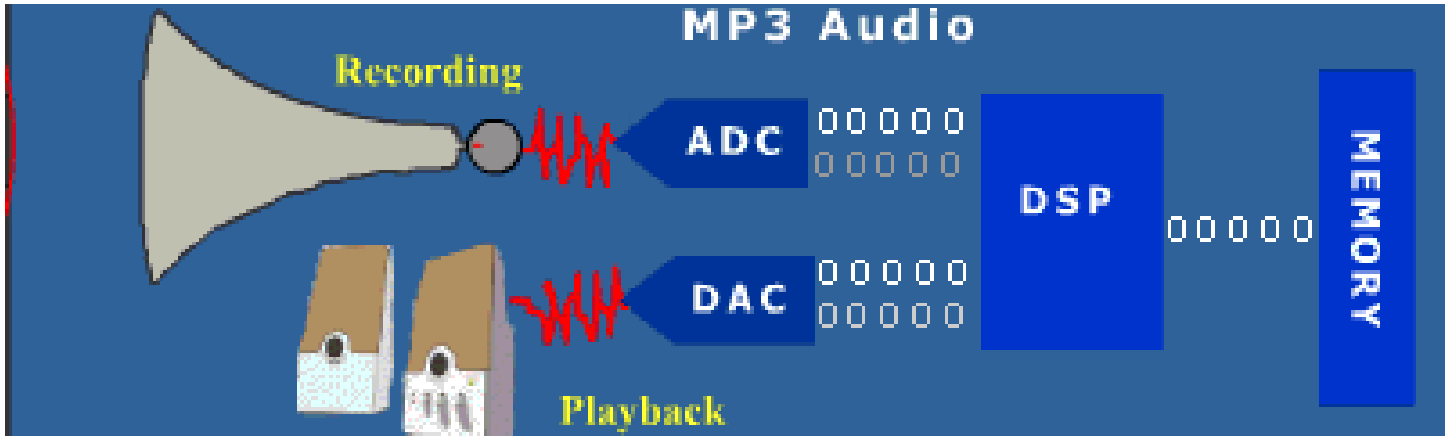
b) Network layer

c) Transport layer

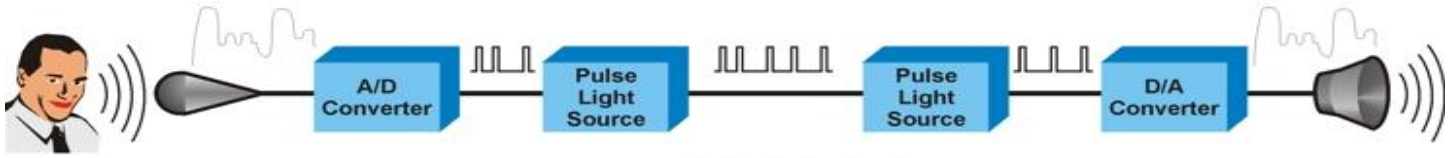
d) None of the above

PHYSICAL LAYER: Signal & Media

Unit 2



Analog Optical



Digital Optical

DATA LINK LAYER

Unit 3

Physical Addressing
Framing
Flow Control
Error Control

POLL 3

- Physical addressing takes place at

a) Physical layer

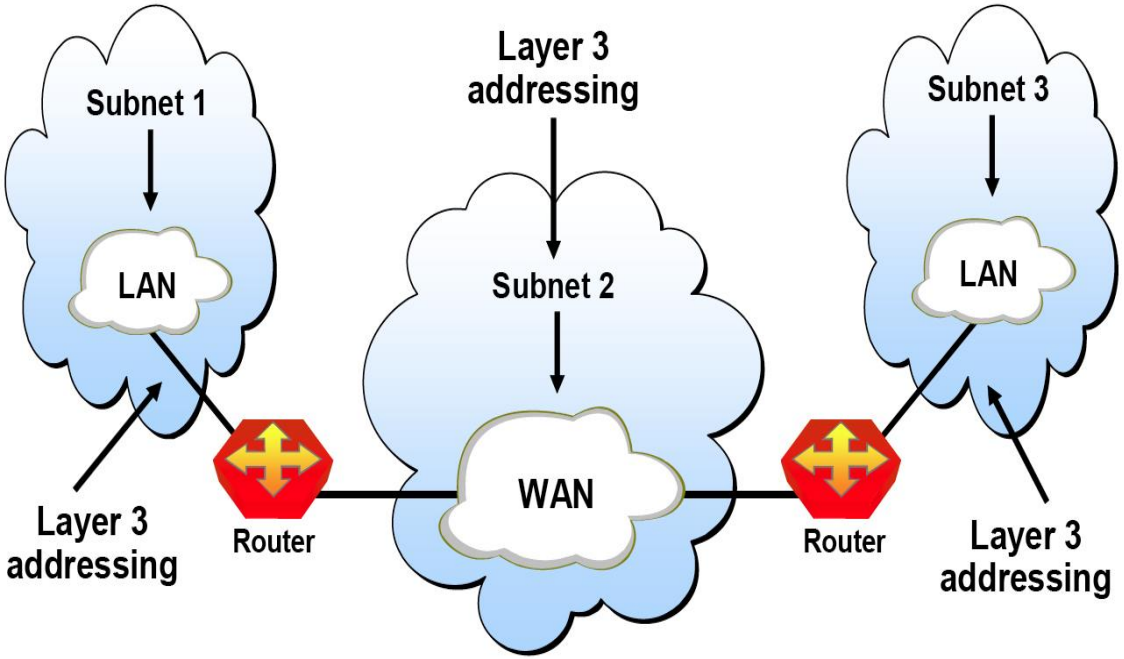
b) Data link layer

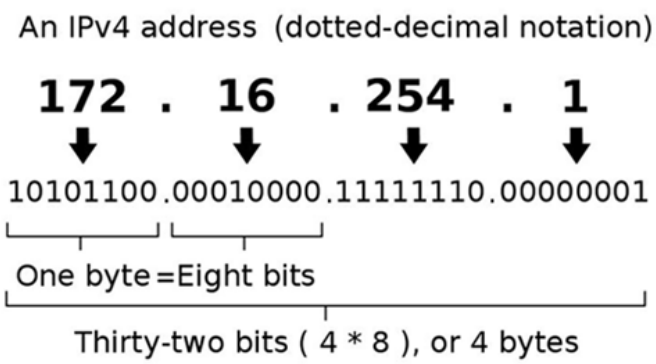
c) Network layer

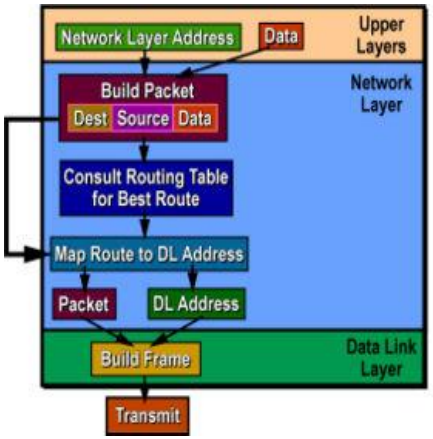
d) Session layer

NETWORK LAYER: IP Addressing

Unit 4







POLL 4

- PIv4 is a _____ bit addressing

a) 32

b) 16

c) 64

d) 128

Routing and Congestion Control

Unit 5

Routing Algorithms
Shortest Path
Metric
Congestion Control Algorithms

POLL 5

- Network Layer deals

a) Routing only

b) Routing & IP addressing

c) Congestion control

d) Both b & c

TRANSPORT LAYER

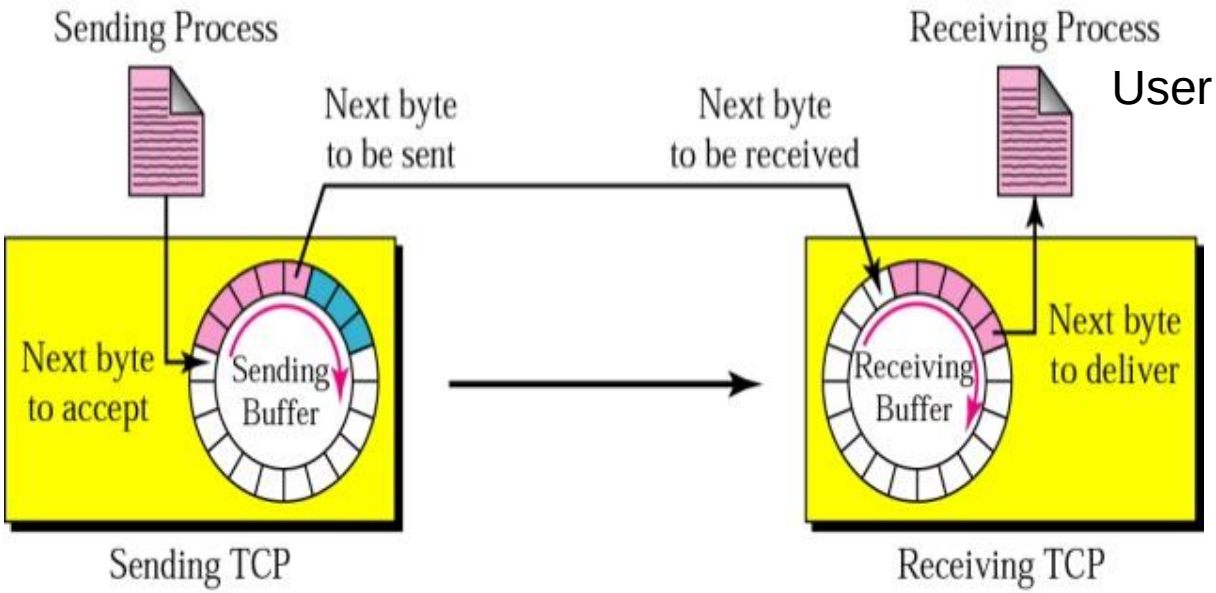
Unit 6

1. Reliable delivery of data
2. Ordering of delivery
3. Port addressing
4. Segmentation and reassembly
5. Connection control
6. Flow control and Error control
7. Main protocols are TCP and UDP

Transmission Control Protocol (TCP)

User Datagram Protocol (UDP)

Sending & Receiving Window



POLL 6

- Data reliability is a part of

a) Data link layer

b) Physical layer

c) Application layer

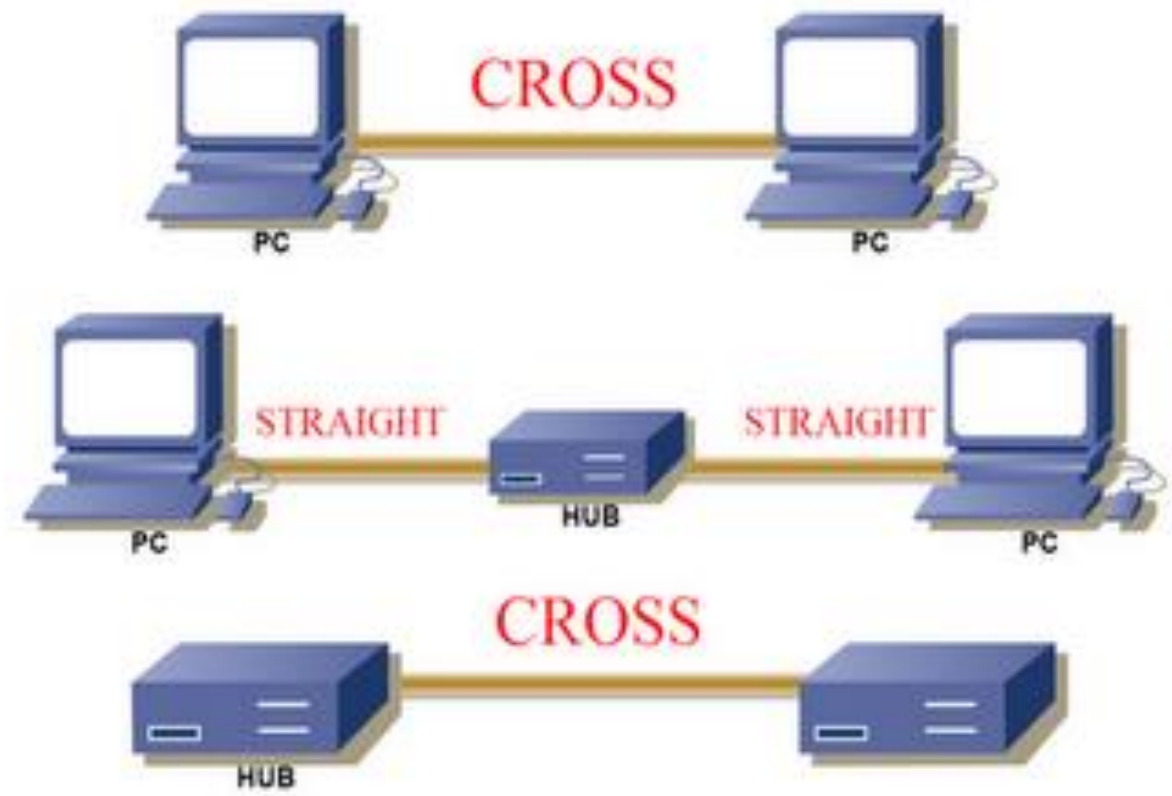
d) Transport layer

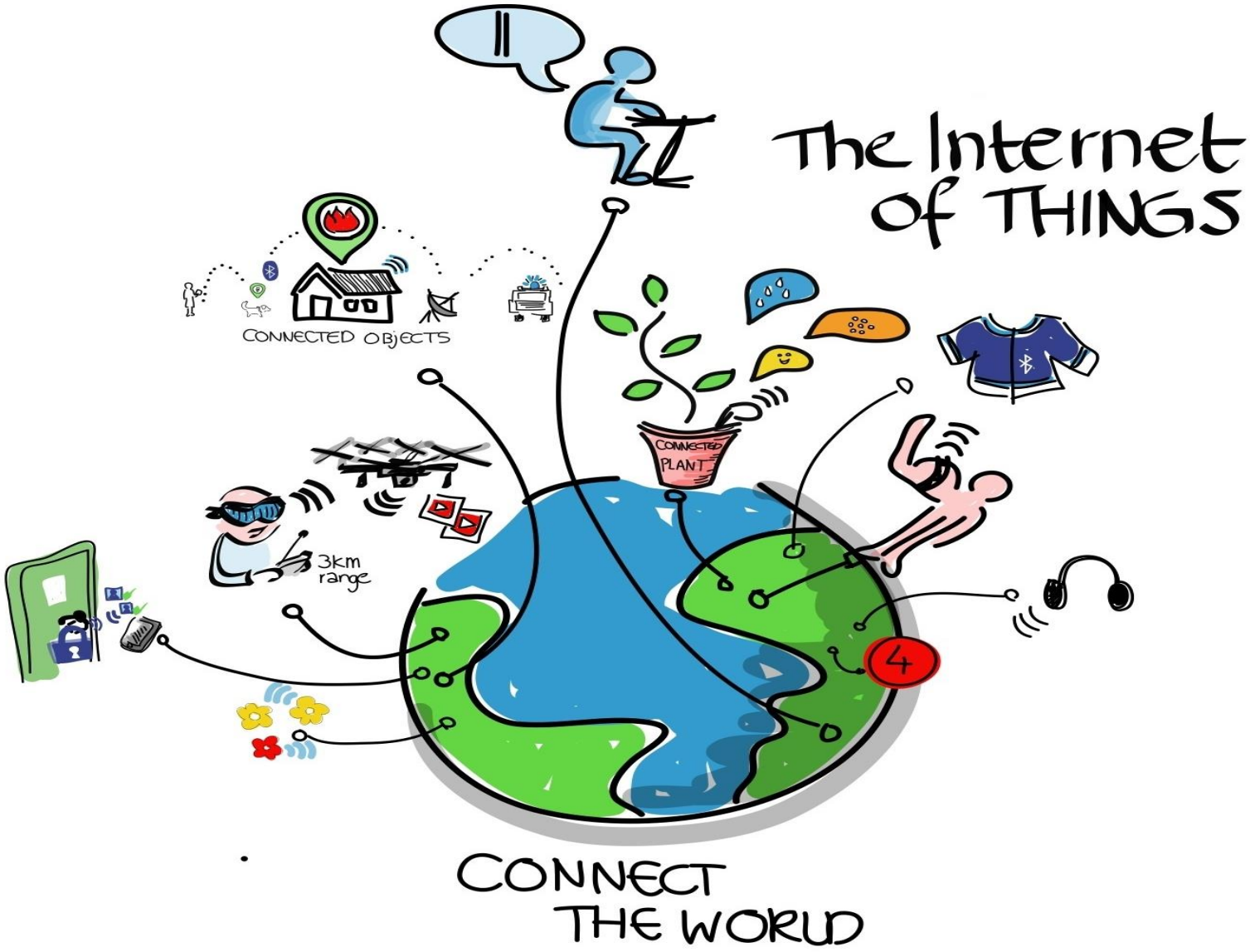
APPLICATION LAYER

Unit 6

Types of Devices

- Laptops
- PDAs
- Cell phones
- Pagers
- Sensors
- Hub
- Switch
- Router etc




The Internet of THINGS
CONNECTED OBJECTS
CONNECTED PLANT
3km range
4
CONNECT THE WORLD

FUTURE SCOPE

They receive live information from the road authority about the state of the roads including traffic jams, accidents and weather. The car transmits information to the road authority regarding speed, distance travelled, use of windscreen wipers, etc.

Challenges

- Bandwidth
- Security risks
- Wide variety terminals and devices with different capabilities
- Fit more functionality into single, smaller device
- QoS

Limitations to Computer Network

- Cyber Crime.
- Need Connectivity.
- Global Protocol acceptance. IPv4 and IPv6.
- Power Source for Mobile Devices.
- Size and Design.
- Cost.

Types of Network

- **Wired Networks**
- high bandwidth
- low bandwidth variability
- can listen on wire
- high power machines
- high resource machines
- low delay
- connected operation

-No Mobility.

- **Mobile Networks**
- low bandwidth
- high bandwidth variability
- hidden terminal problem
- low power machines
- low resource machines
- higher delay
- disconnected operation

Mobility.


Any questions?