1. Difference Between OSI and TCP/IP.

Features	OSI Model	TCP/IP.
Type	Theoretical / conceptional	practical / Real word.
purpose	To provide detailed reference model for understanding and designing network protocal	To provide a practical framework for implementing and using network Protocals.
Layers	7 layers : Physical, Data link, Network, Transport, session, Presentation, Application	4 layers: Link, Internet, Transport, Application.
layer functions	Specific function defined for each layer, including detailed services for session management and presentation.	Focuses on end to end communication often combining multiple OSI layers into fewer layers.
Usage.	primarily used for educational purpose and theoretical understanding	widely used in real-world networking and internet communicaton
Protocal examples	No specific protocols Serves as a guideline.	Specific protocals IP, TCP, UDP, HTTP, FTP.

Development	Developed by the ITSO as an International Standard	Developed by ARPAN and the IETF for practical Implementation of Networking
Adoption	Primarily used for understanding, training and theoretical modeling	widely adopted for actual network deve and Internet communication.

2) Different types of Computer Network.

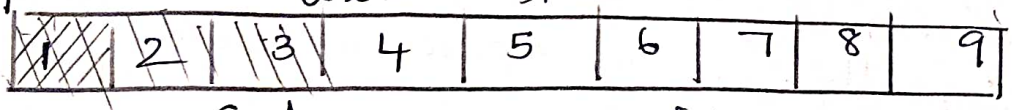
Type of network	Description	Key Characteristic	examples
LAN (local Area Network)	connects computer and devices within a small geographical area, like a home, office	High speed connection Limited range private ownership	office network, home wifi
WAN (wide Area Network)	connects networks over large geographical areas such as cities countries, or even globally.	- Lower speed compared to LAN - uses public or leased communication line	Internet, cooperate network ac multiple cities
MAN (metropolitan Area Network)	covers a large geographical area than a LAN but smaller than WAN	moderate speeds connects multiple LANs	City-wide WiFi, Cable TV networks.

PAN (Personal Area Network)	connects devices within a very short range, typically within a few meters, such as between a smartphone and a laptop	Very short range Used for personal device communication can be wired or wireless.	Bluetooth connections, USB connections
CAN (Campus Area Network)	connects networks across multiple buildings within a campus, such as a university or business campus	Larger than a LAN but smaller than a WAN Typically privately owned	University network.
SAN (Storage Area Network)	provides high speed network access to consolidated block-level data storage	Hegh speed connections Dedicated to storage devices.	Data center. Storage solution

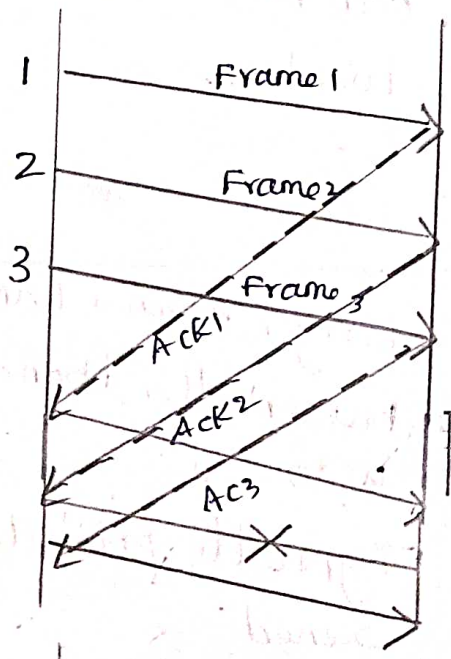
Station A needs to send a msg consisting of 9 packets to station B using sliding window protocol (window size 3) and selective Repeative ARQ control strategies is used. all packets are ready and immediately available for transmission if every 5th packet that A transmit get lost (but no Ack from B ever get lost). then what is the no of packets that A will transmit for sending the message to B.

Answer No of frames = 9

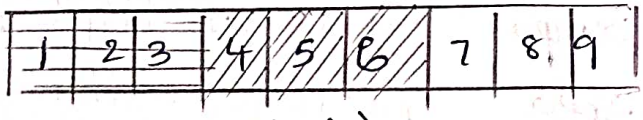
Step 1: Window size = 3



Sender receiver

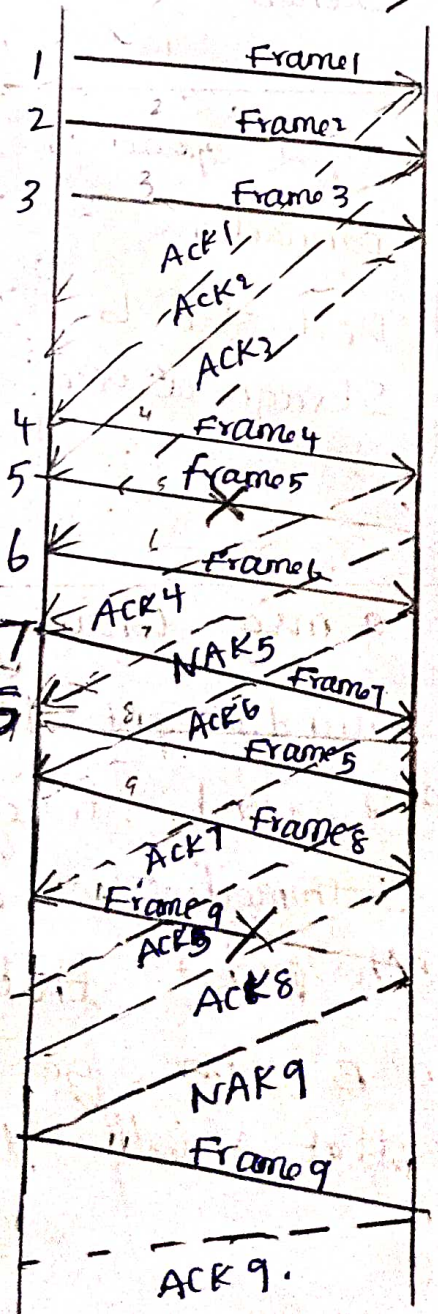


No Error in Transmission



Frame LOST (5)

Step 2



NAK 5 (transmit from receiver to sender).

retransmission of 5

Frame 9 lost

NAK 9 (transmit from receiver to sender)

retransmit 9th Frame.

No of packets that A will transmit = 11

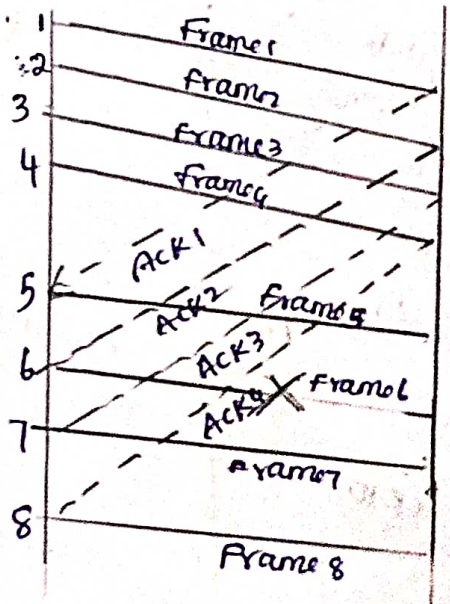
Host A wants to send 10 packets to Host B the Host agreed to go with Selective repeat protocol how many no of frames are transmit by Host A if every 6th frame that is transmit by Host A if either corrected or lost.

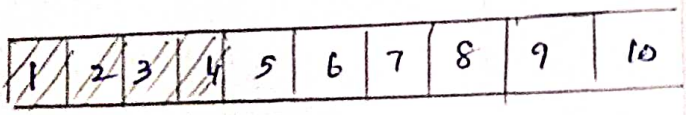
Soln:

no of frames = 10

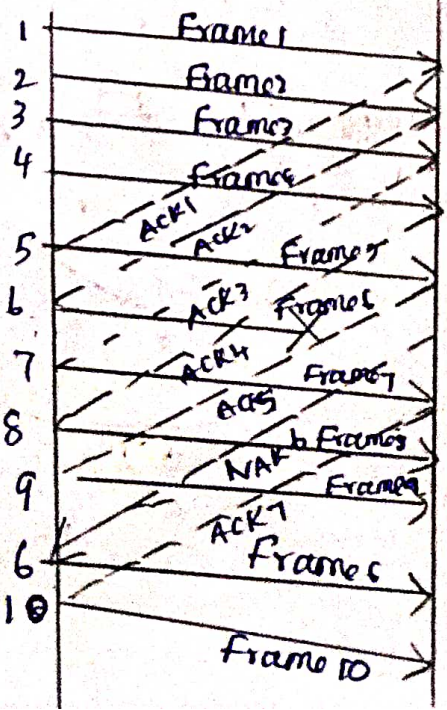
window size = 4

Sender Receiver.

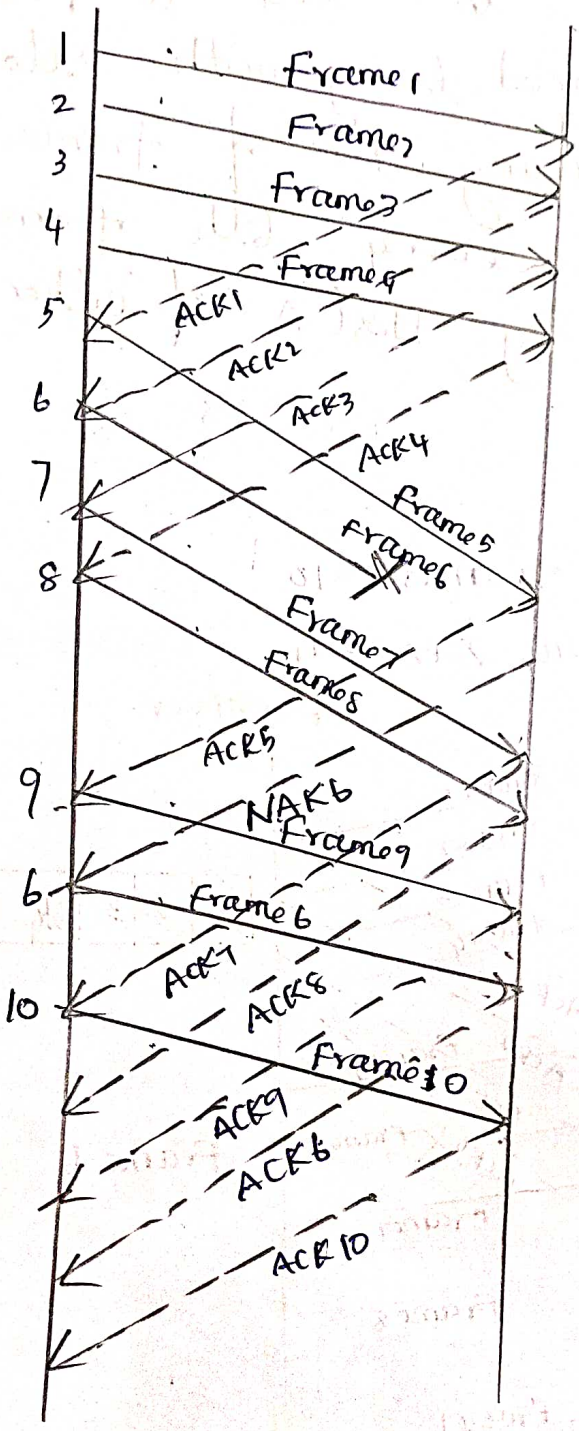




Frame 6 lost



Retransmit Packet 6. after Receiving NAK from Receiver.



No of Frames transmit From A = 11