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CIE-1

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Subject : CN & IP

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1a] The layers in the TCP/IP protocol suite do not exactly match those in the OSI model. The original TCP/IP protocol suite was defined as having four layers: Host-to-Network, Internet, transport, and application. However when TCP/IP is compared to OSI Model we can say that the TCP/IP protocol suite is made of five layers : physical, data link, network, transport, and application.

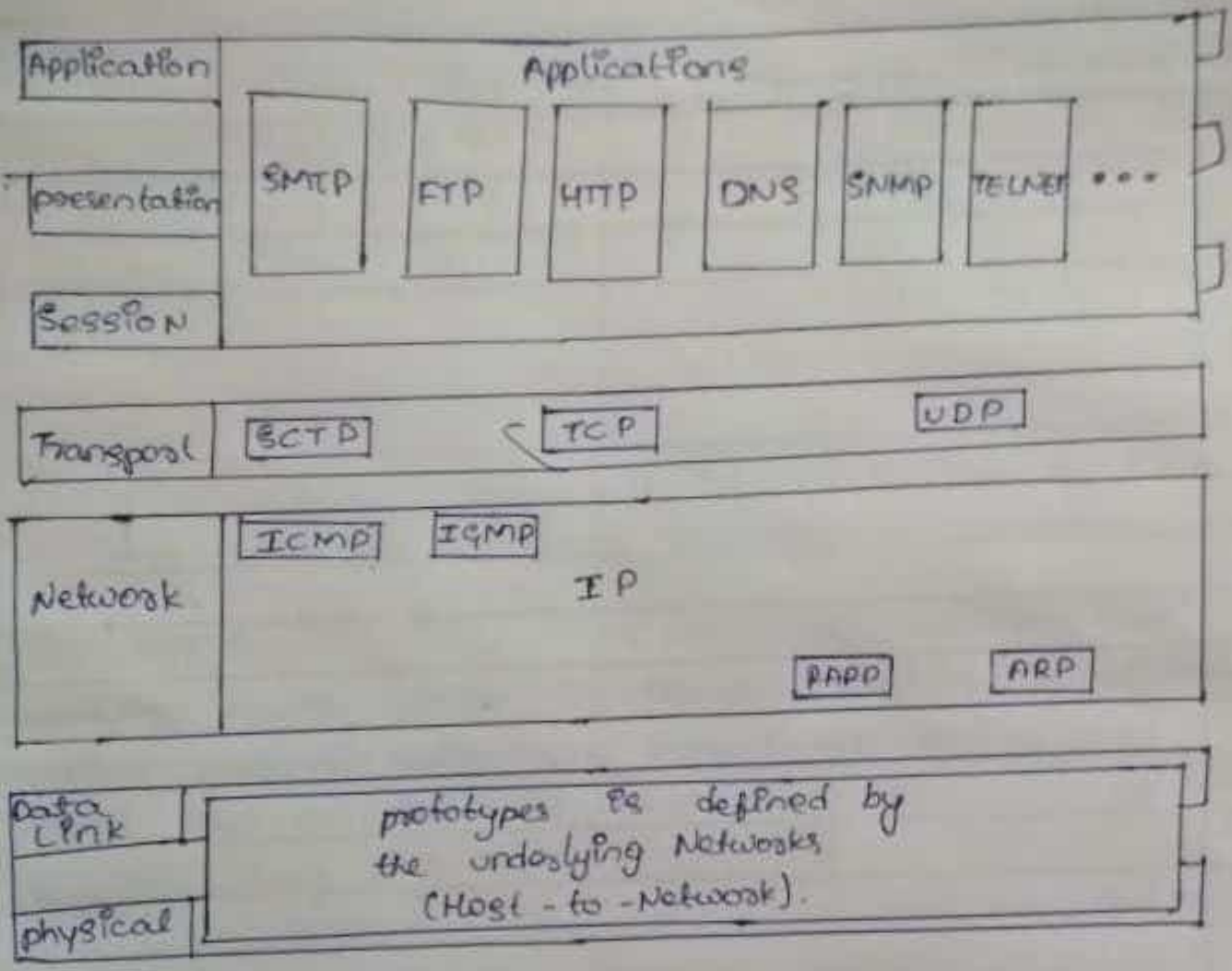
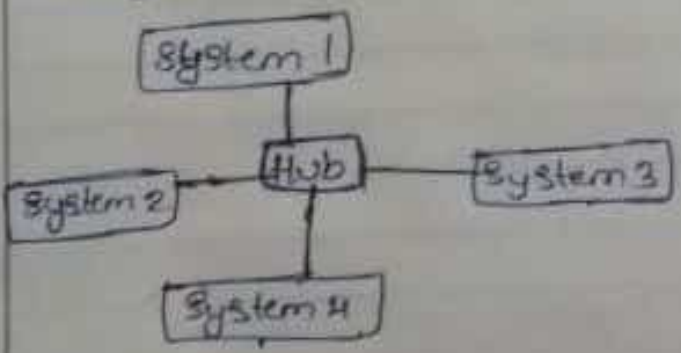
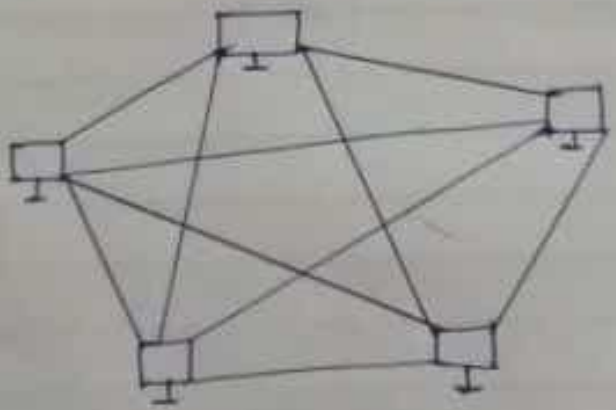


Fig:- TCP/IP and OSI Model

1b] Comparison between Star And Mesh topology.

Star topology	Mesh topology.
* In star topology the nodes are connected to the central hub or routers.	* In Mesh topology the nodes are connected to each other completely via dedicated link.

Ranjan Gowda S B 1DA19CS119 Section: B

Star	Mesh
* There is N links in star topology. If there are N nodes	* There are N(N-1)/2 links in Mesh topology, If there are N Nodes.
* The Cost of Star topology is less	* The Cost of Mesh topology is expensive
* The Complexity of Star topology is quite simple	* The Complexity of Mesh topology is Complex
* In star topology, the information is travel from central or router to all	* In mesh topology the information is travel from Nodes to Nodes.
* Diagram 	* Diagram. 

2 c]

Stop and wait ARQ

- Used in Connection oriented communication
- It offers error and flow Control
- It is used in transport and Data Link layers
- Stop and wait ARQ mainly implements Sliding Window protocol concept with Window Size-1

Working of Stop and wait ARQ:

- Sender A, Sends a data frame or packet with Sequence Number 0
- Receiver B, after receiving Data frame. Sends and acknolegment and with Sequence Number 1 those is only one bit Sequence Numbers that implies that both sender and receiver have buffer for one frame or packet only.

The Stop and wait ARQ Solves main three problems. but may cause big performance issue as sender always waits for acknolegment even if it has next packet ready to send.

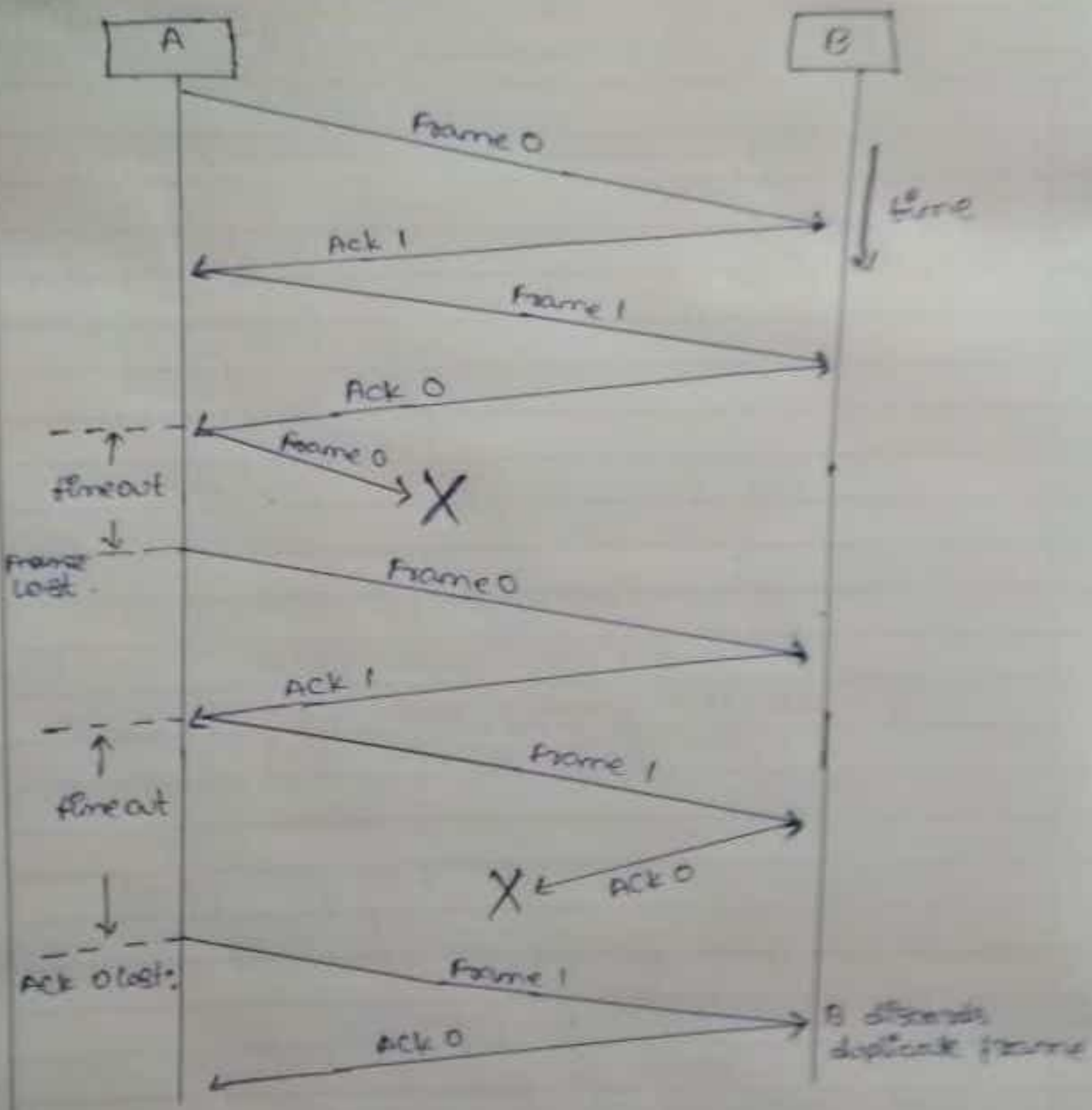
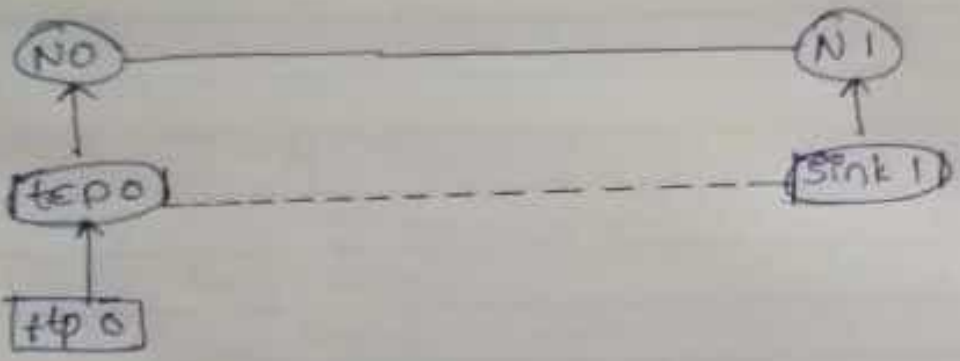


Fig: working of A wait & stop ARQ.

8a]. Topology



program :-

```
set ns [new Simulator]
set tf [open test1.tr w]
$ns trace-all $tf
set nf [open test1.nam w]
$ns namtrace-all $nf
set n0 [$ns node]
set n1 [$ns node]

$ns duplex-link $n0 $n1 100Mb 1ms DropTail
set tcp0 [new Agent/TCP]
$ns attach-agent $n0 $tcp0
set ftp0 [new Application/FTP]
$ftp0 attach-agent $ftp0

set sink1 [new Agent/TCPSink]
$ns attach agent $n1 $sink1
```

Ranjan Routh S-B 1DA19CS419

```
$ftp0 set packet size_size 500
$ftp0 set interval 0.001

$ns connect $tcp0 $sink1

proc finish {} {
global ns nf tf
$ns flush-trace
exec nam test1.nam
close $nf
close $tf
exit 0
}
$ns at 0.1 "ftp0 start"
$ns at 4.5 "ftp0 stop"
$ns at 5.0 "finish"
$ns run
```

MCQs

1=D
2=D
3=B
4=D
5=D
6=A
7=D
8=C
9=B
10=C