Telemática y Sistemas de Transmisión de Datos

Tema 1

Arquitectura de un sistema teleinformático

Objetivos de un Sistema Teleinformático (ST)

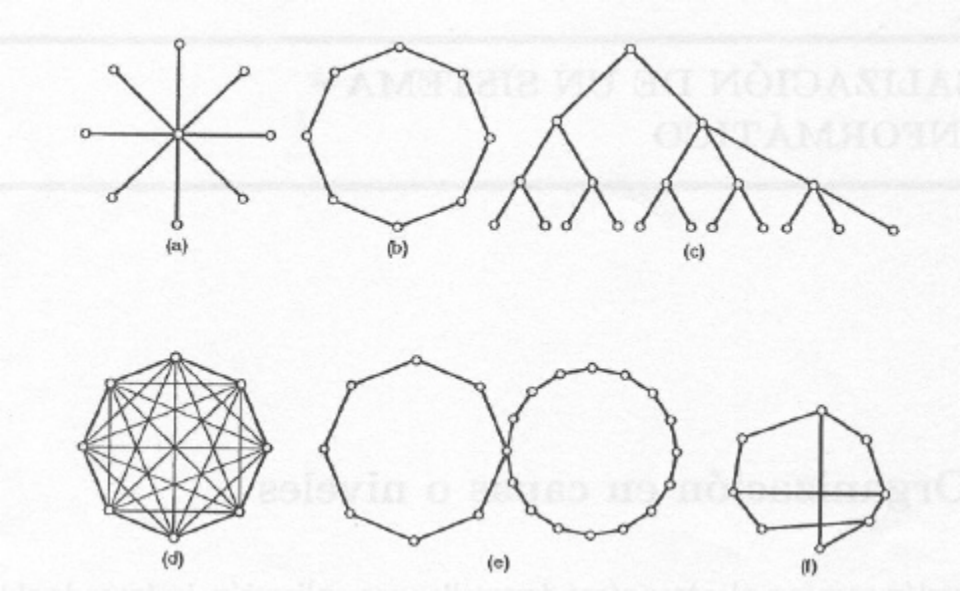
- Compartir los recursos, software o hardware
- Mejorar la fiabilidad
- Abaratar costes

Clasificación de los sistemas teleinformáticos

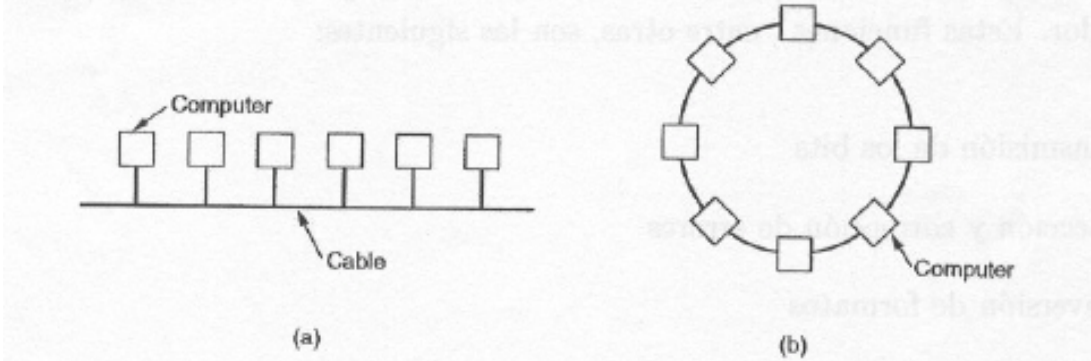
Interprocessor distance	Processors located in same	Example
0.1 m	Circuit board	Data flow machine
1 m	System	Multicomputer
10 m	Room	Local area network
100 m	Building	
1 km	Campus	
10 km	City	Metropolitan area network
100 km	Country	Wide area network
1,000 km	Continent	
10,000 km	Planet	The Internet

Topologías para la subred

Punto a punto:



Difusión
(broadcasting)



Organización en niveles

Filósofo

Marciano

Filósofo
Capuchino
Descalzo

Organización en niveles

Filósofo

Marciano

Comunicación virtual
(protocolo)

Filósofo
Capuchino
Descalzo

Organización en niveles

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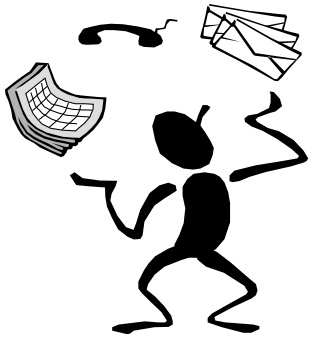
Capuchino
Descalzo

Interfaz
Filósofo/Traductor



Traductor
Yoda-
Jedi

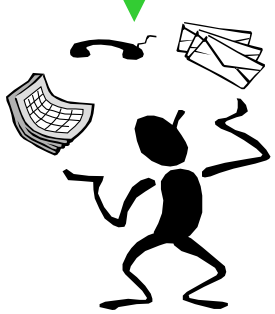
Organización en niveles

Filósofo Marciano

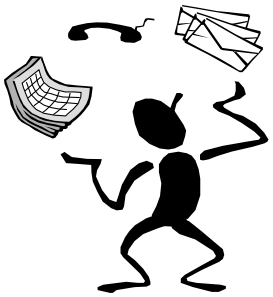
Comunicación virtual (protocolo)

Filósofo Capuchino Descalzo

Interfaz Filósofo/Traductor



Protocolo de traducción



Traductor Yoda-Jedi

Traductor Capuchino - Jedi

Organización en niveles

Filósofo Marciano

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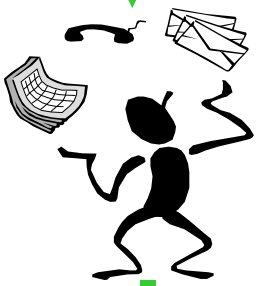
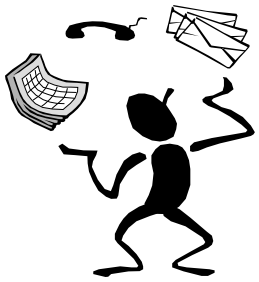
Traductor Yoda-Jedi



Protocolo de traducción



Traductor Capuchino - Jedi

Androide Transmisor

Organización en niveles

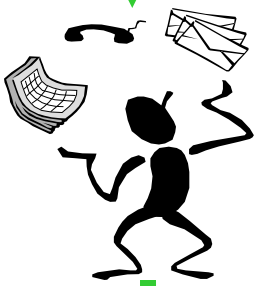
Filósofo Marciano

Comunicación virtual (protocolo)

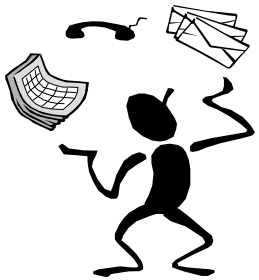
Filósofo Capuchino Descalzo

Interfaz Filósofo/Traductor

Traductor Yoda-Jedi



Protocolo de traducción



Traductor Capuchino - Jedi

Androide Transmisor / Receptor

Protocolo androide

Transmisión real

Androide Transmisor / Receptor

Organización en niveles

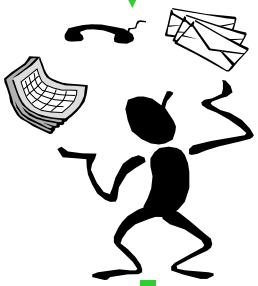
Filósofo Marciano

Comunicación virtual (protocolo)

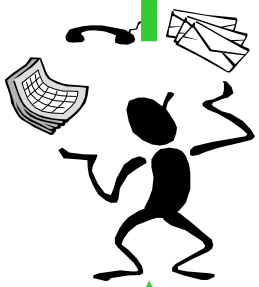
Filósofo Capuchino Descalzo

Interfaz Filósofo/Traductor

Traductor Yoda-Jedi



Protocolo de traducción



Traductor Capuchino - Jedi

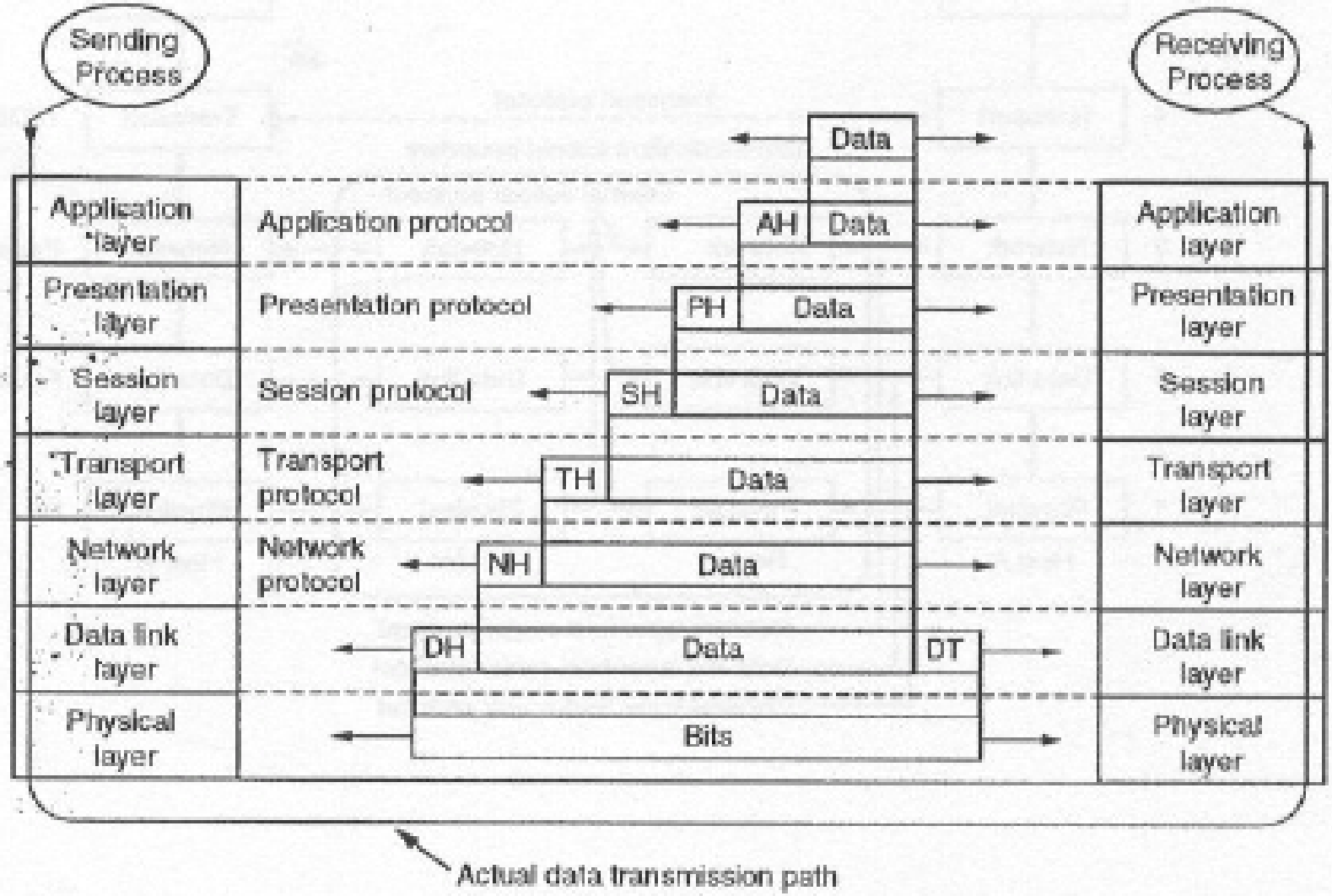
Androide Transmisor / Receptor

Protocolo androide

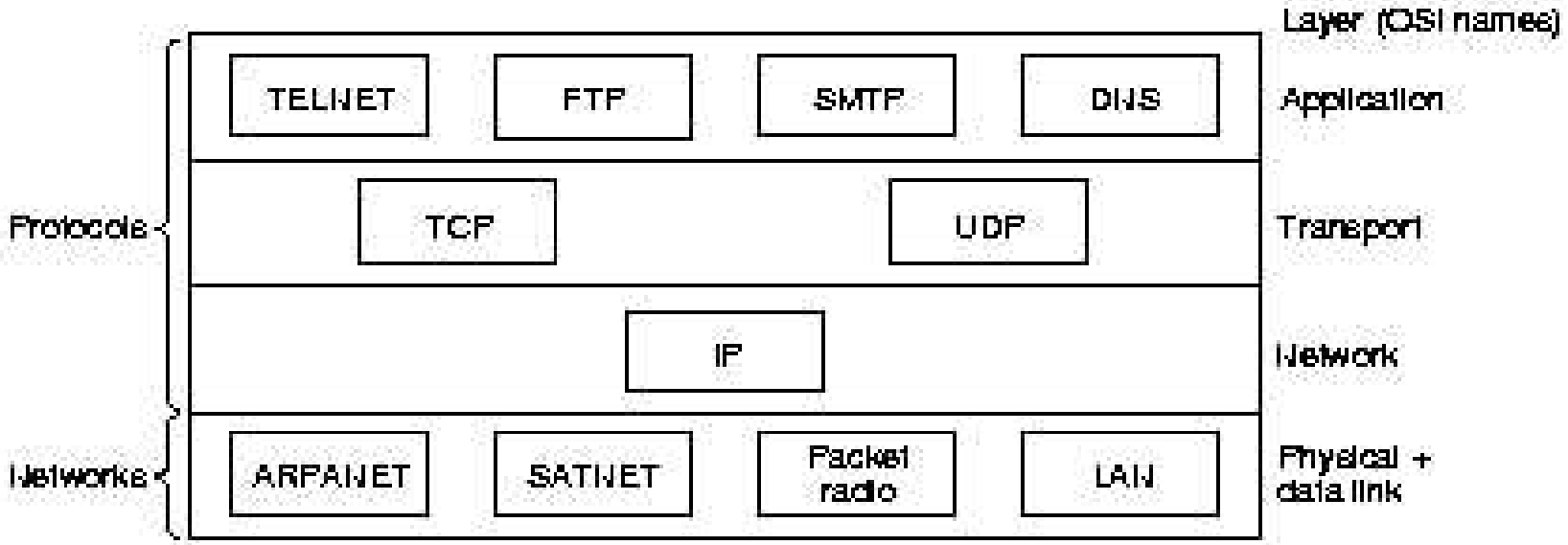
Transmisión real

Androide Transmisor / Receptor

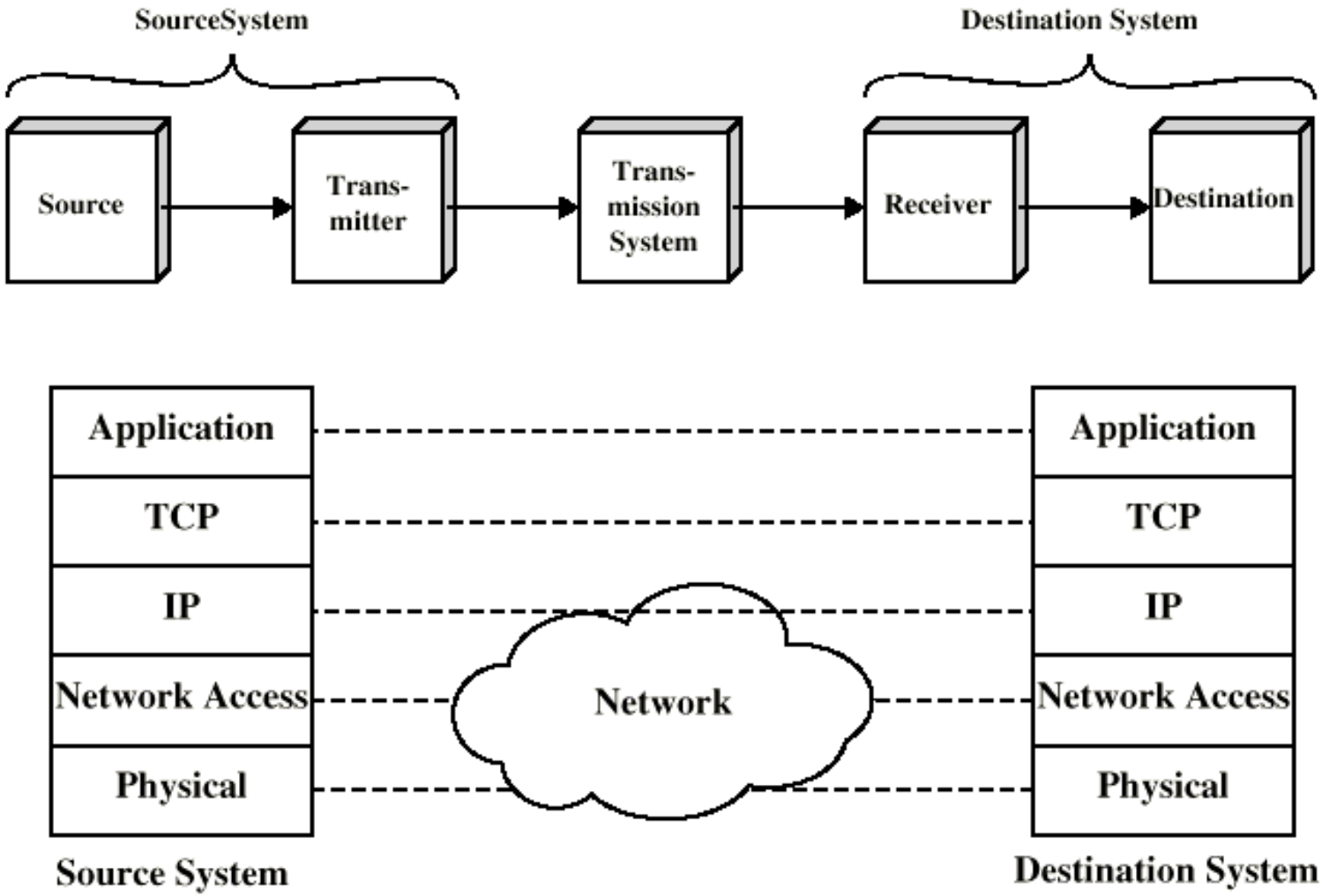
Modelo ISO/OSI



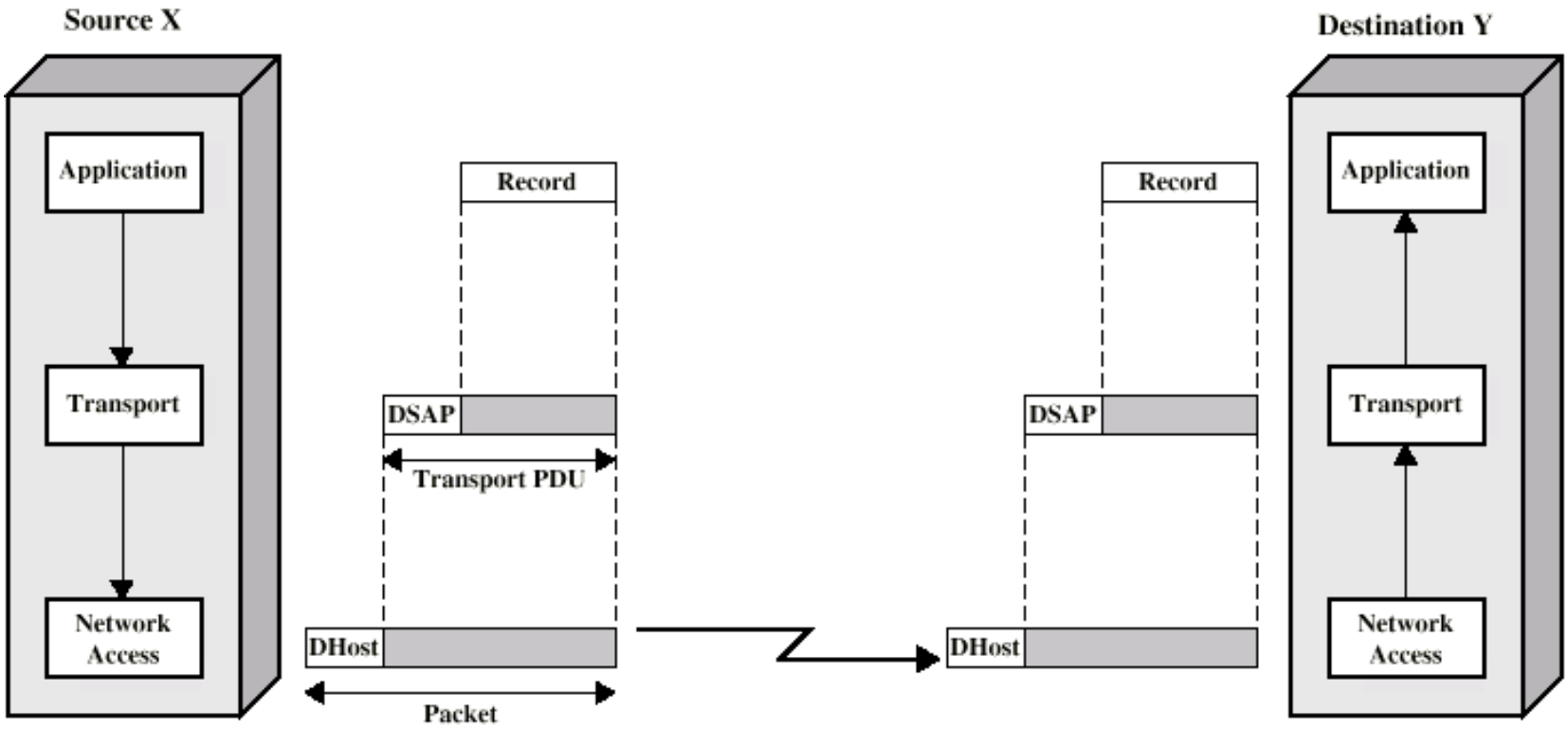
MODELO TCP/IP



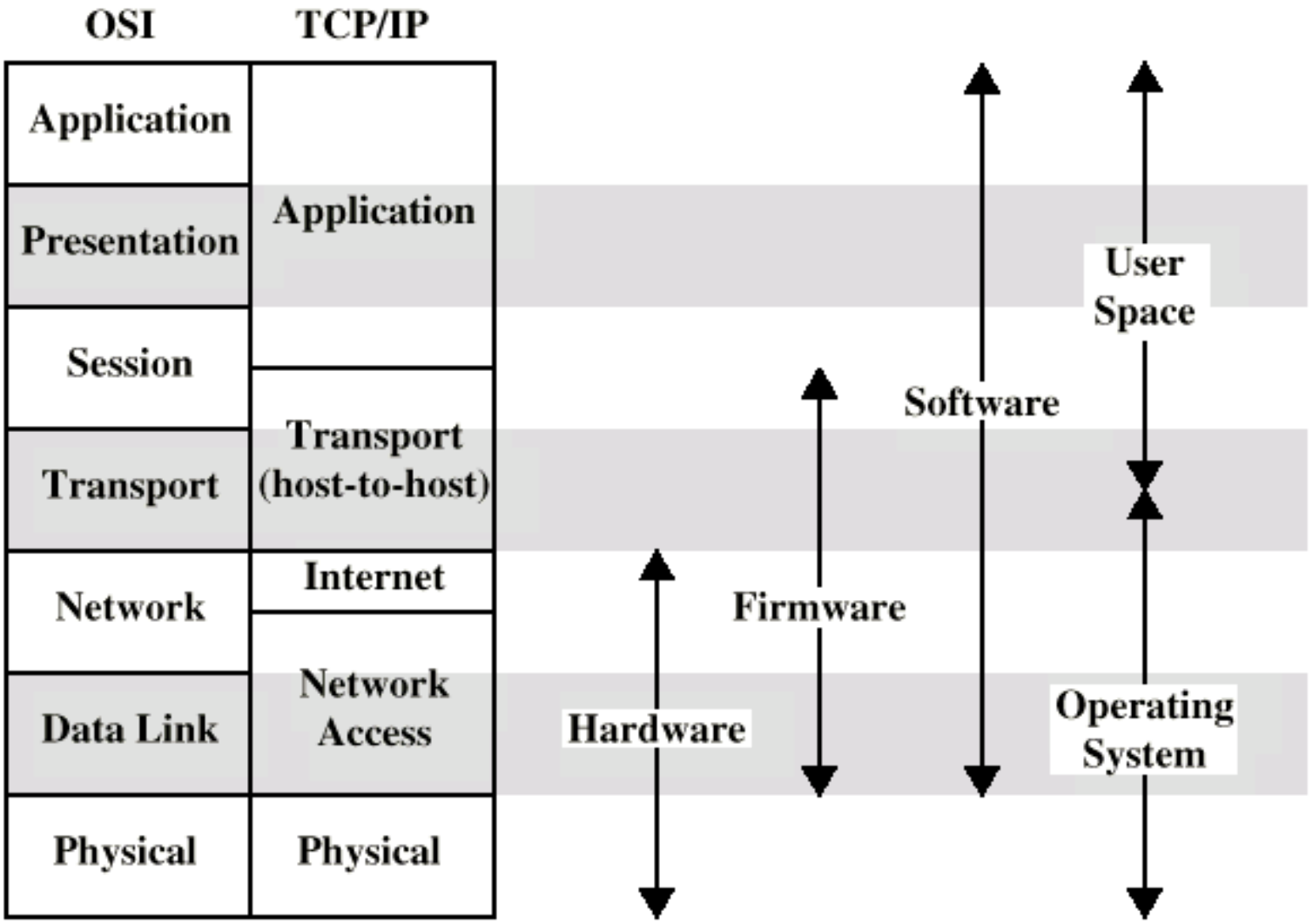
MODELO TCP/IP



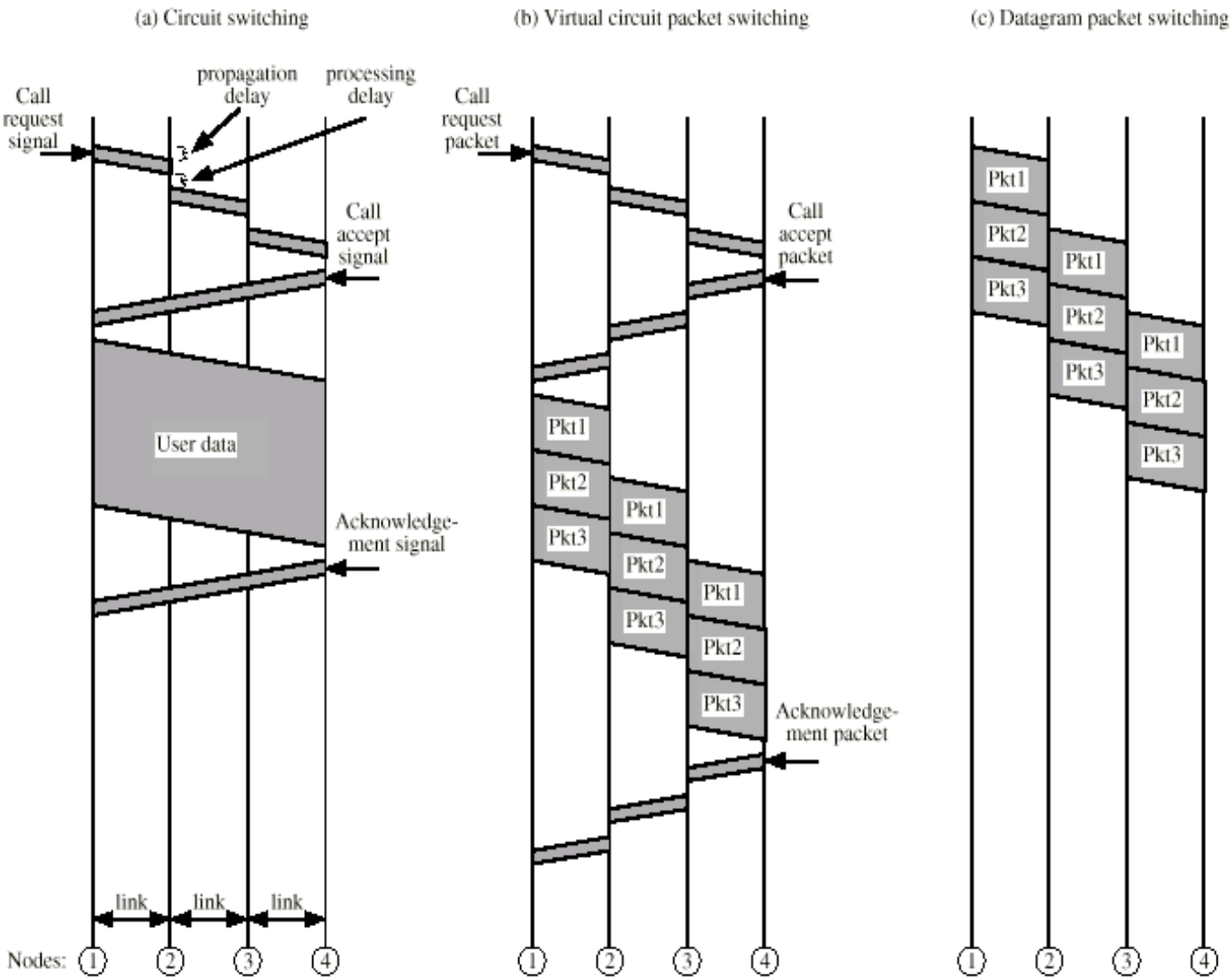
Operation of a Protocol Architecture



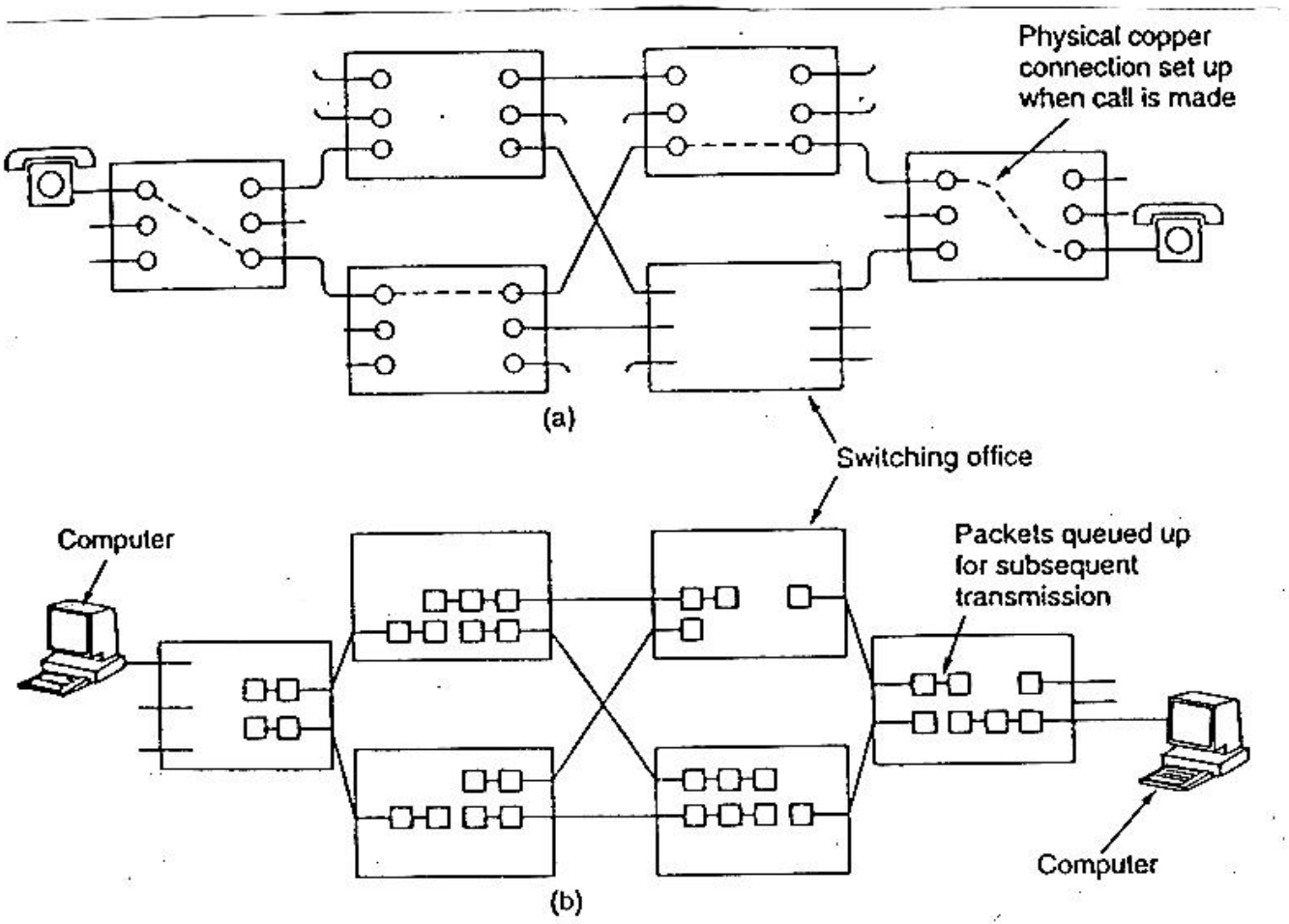
COMPARACIÓN OSI - TCP/IP



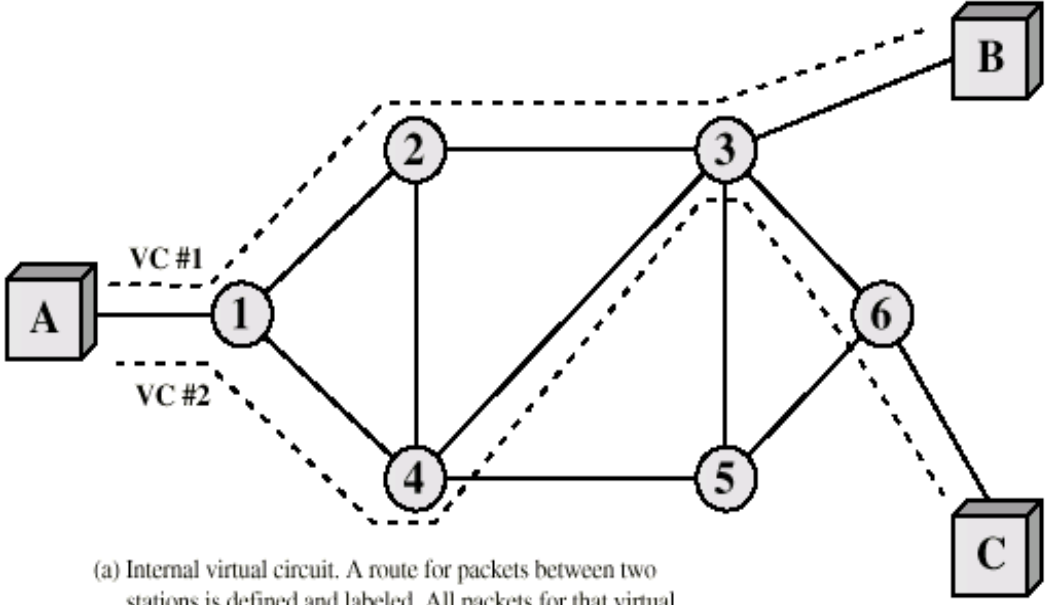
Tipos de conmutación



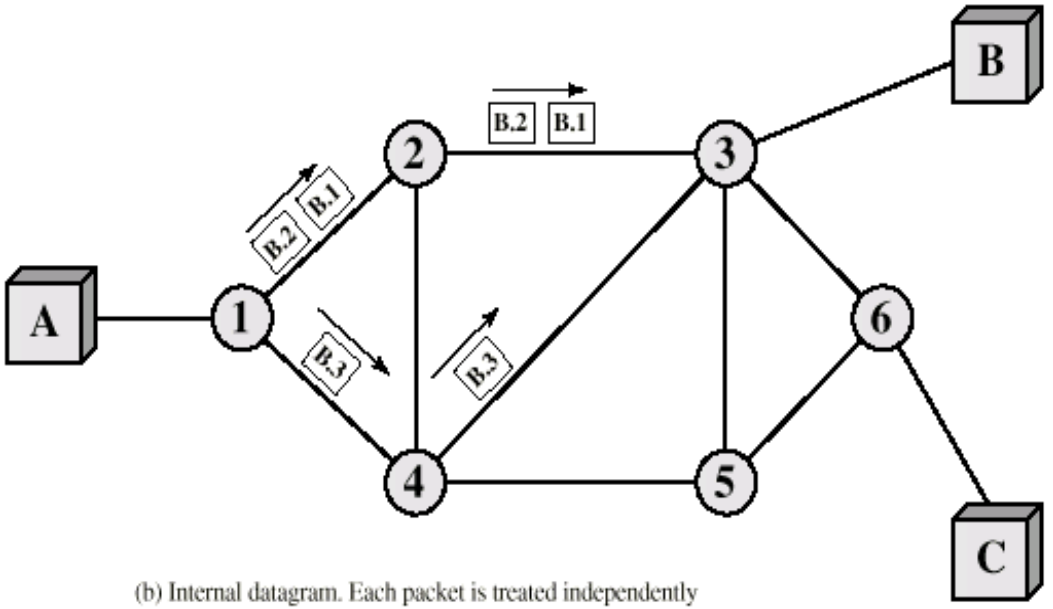
Transmisión según conmut.



Circuitos virtuales

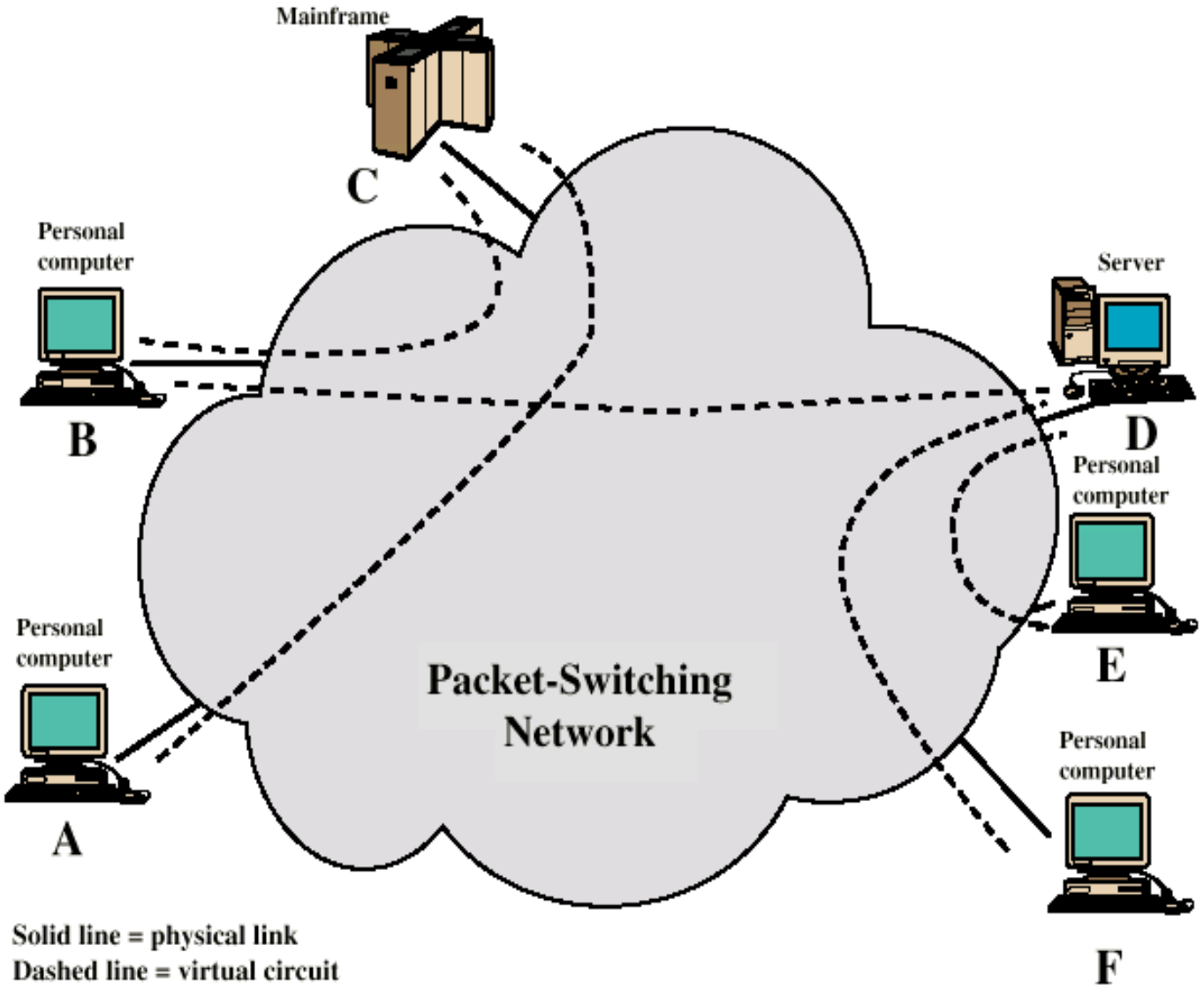


(a) Internal virtual circuit. A route for packets between two stations is defined and labeled. All packets for that virtual circuit follow the same route and arrive in the same sequence.

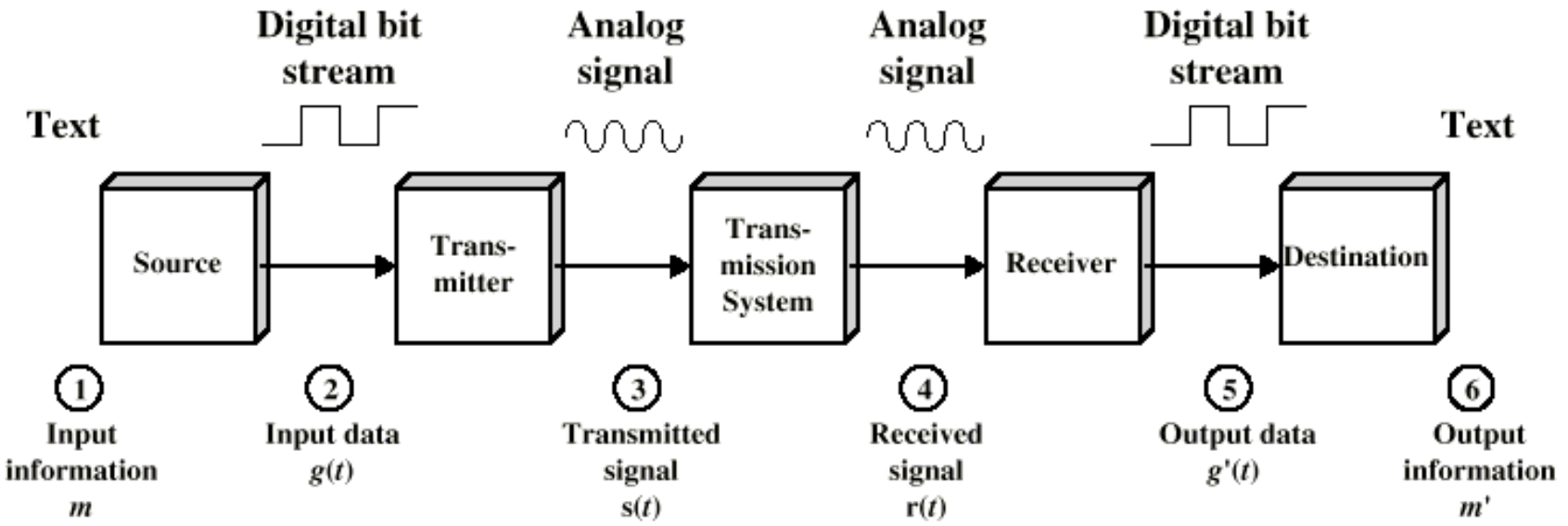


(b) Internal datagram. Each packet is treated independently by the network. Packets are labeled with a destination address and may arrive at the destination node out of sequence.

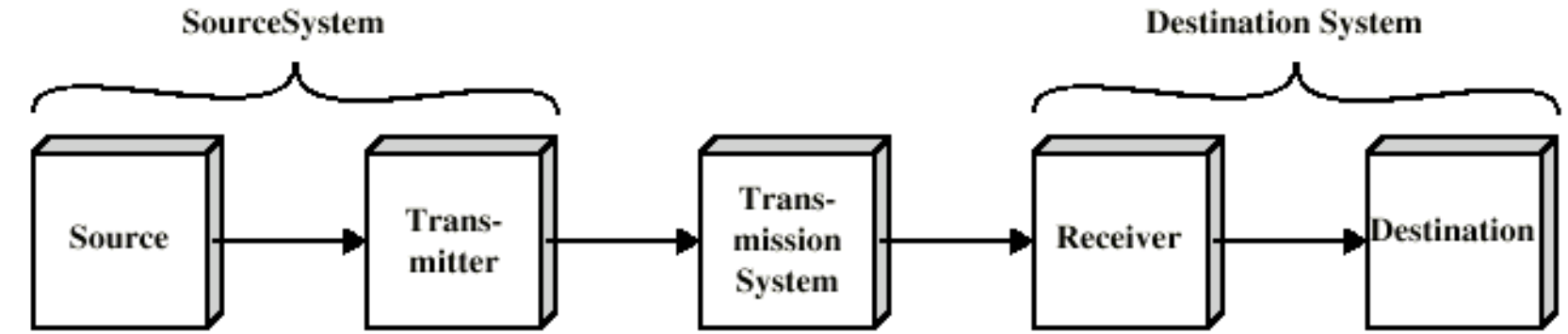
Circuitos virtuales en X.25



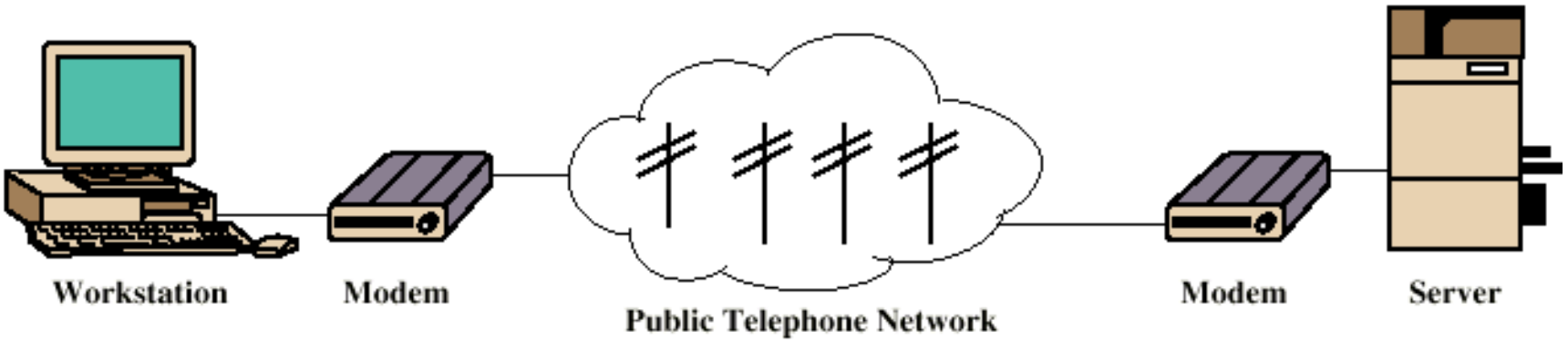
Modelo de un sistema de comunicación (SC)



Modelo de un sistema de communicación

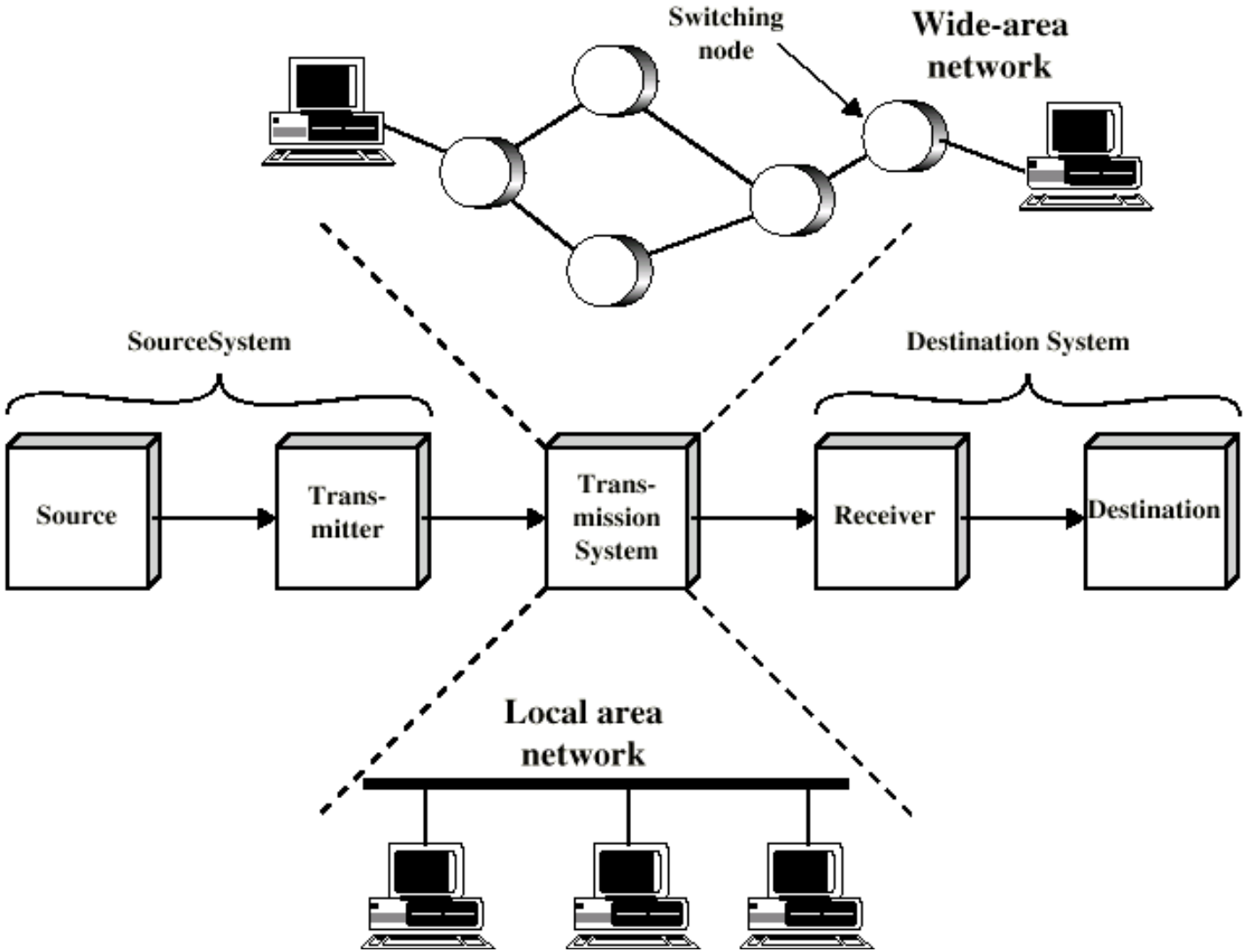


(a) General block diagram



(b) Example

Ejemplo de red de computadores como SC



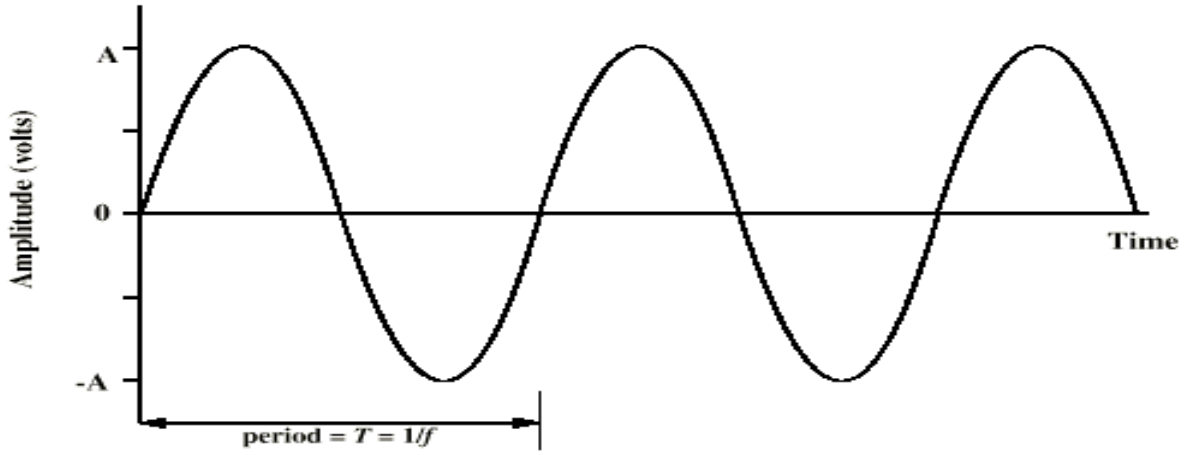
Capa física de la ISO

- Se ocupa del interfaz físico entre el el dispositivo transmisor de datos (computador) y el medio de transmisión o la red.
- Define las características del medio de transmisión usado, tales como:
  - Niveles de tensión
  - Tipos de conectores
  - Velocidades de transmisión y longitud del enlace
  - etc.

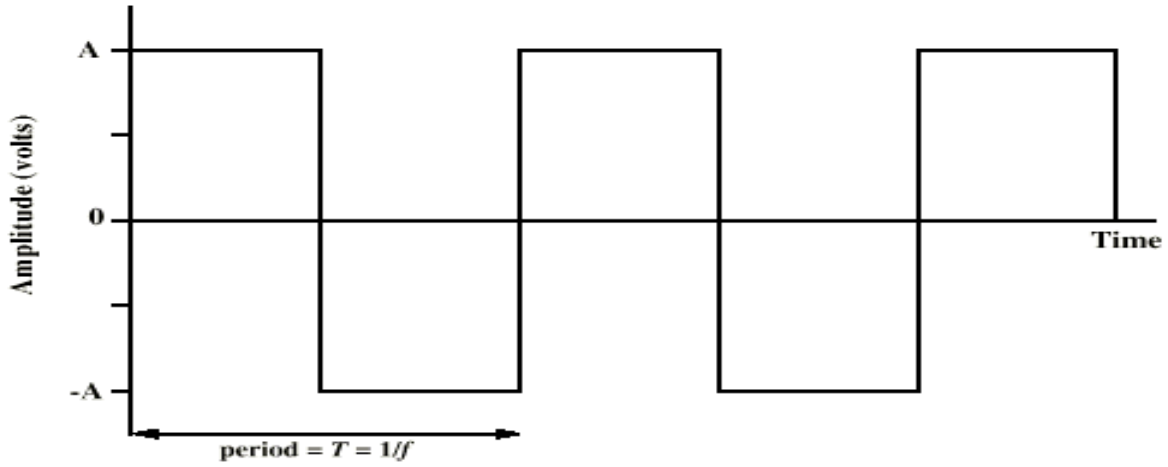
Conceptos básicos sobre análisis de señales

Amplitud (A)

Periodo (T)



(a) Sine wave



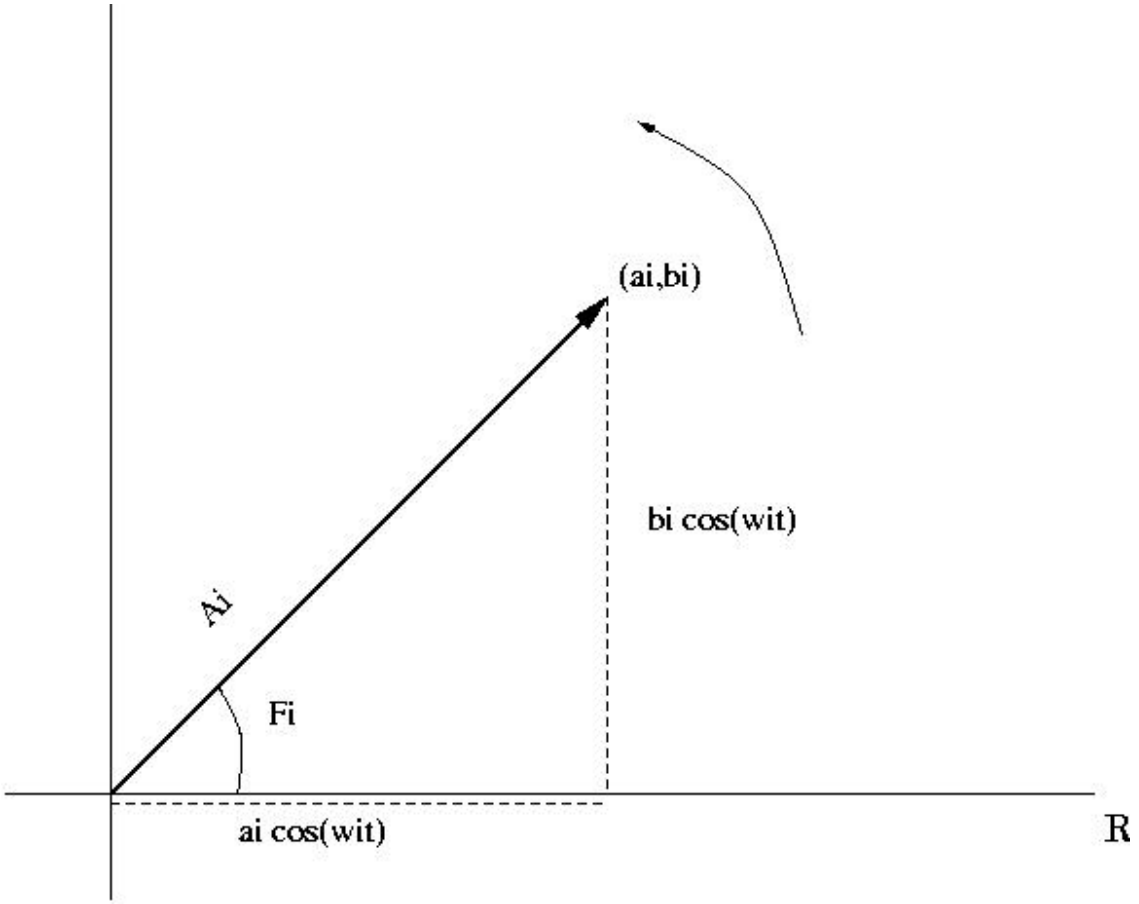
(b) Square wave

Conceptos básicos sobre análisis de señales

Fasor o armónico de orden *i*

$$a_i \cdot \cos(w_i t) + b_i \cdot \mathrm{sen}(w_i t)$$

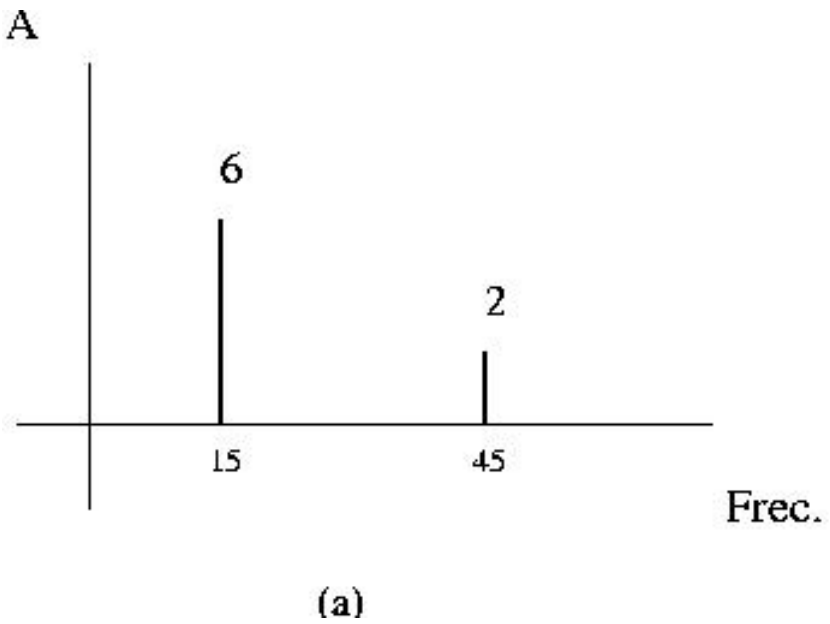
$$A_i = \sqrt{a_i^2 + b_i^2}$$



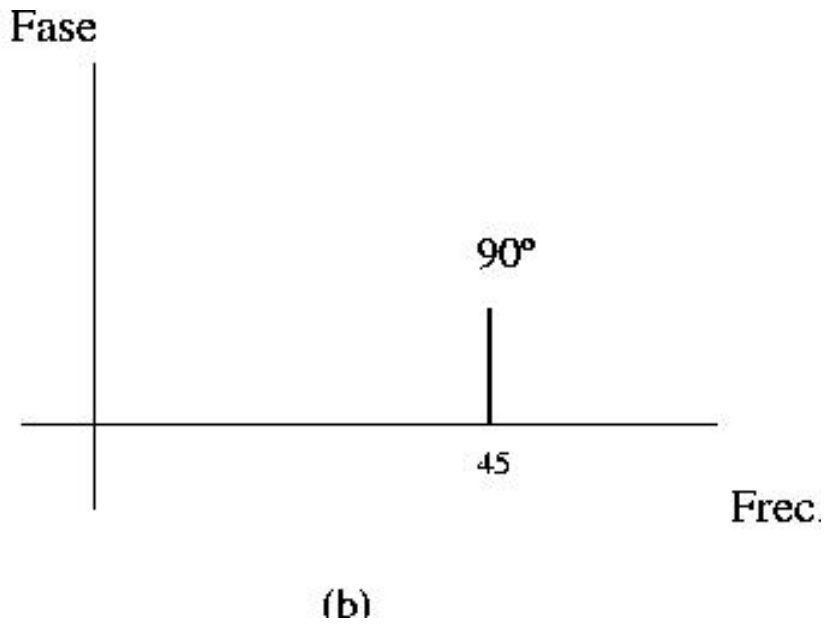
Conceptos básicos sobre análisis de señales

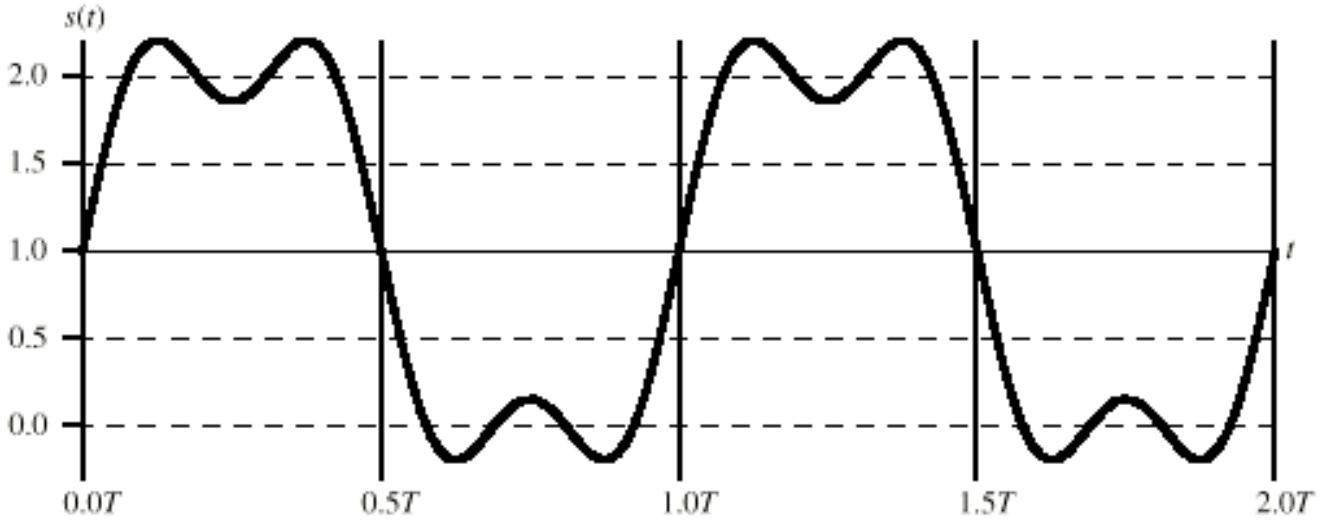
$$x(t) = 6 \cdot \cos(2\pi 15t) + 2 \cdot \cos(2\pi 45t + 90°)$$

Espectro de amplitud (a)

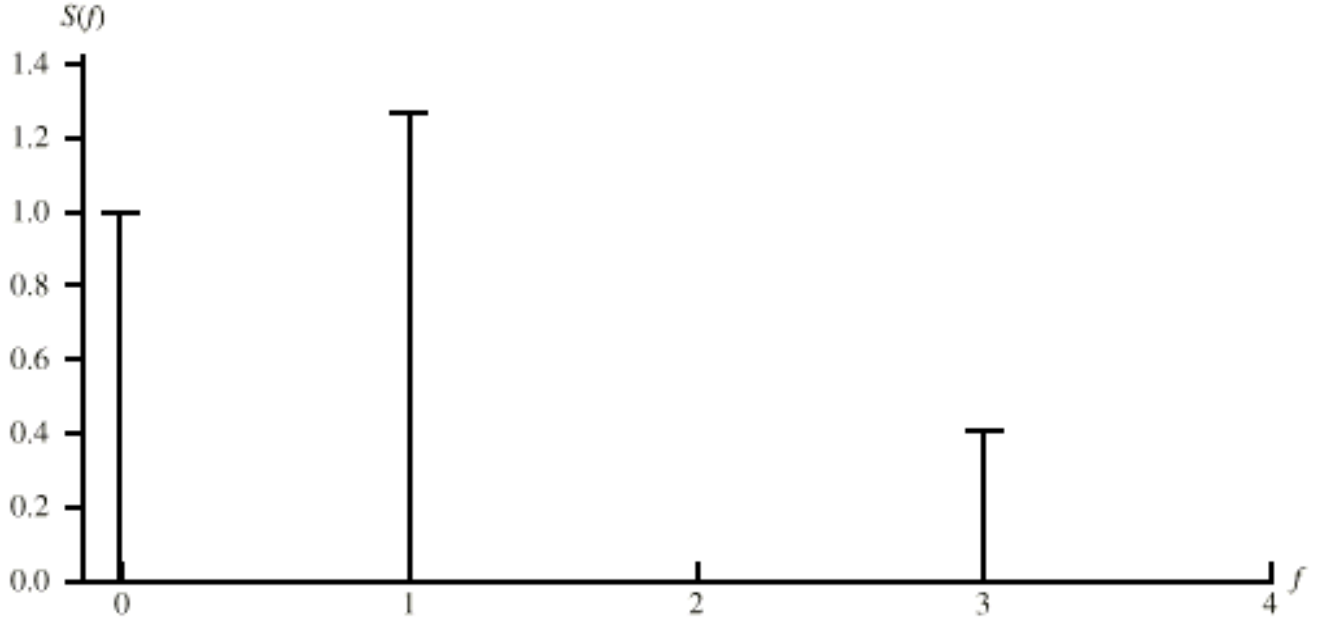


Espectro de Fase (b)

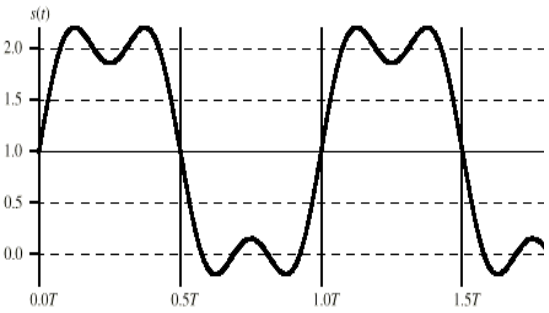




(a) s(*t*) = 1 + (4/) [sin (2 *ft*) + (1/3) sin (2 (3*f*)*t*)]



(b) S(*f*)



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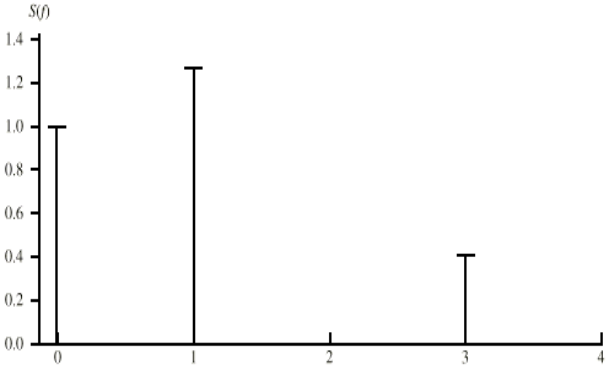
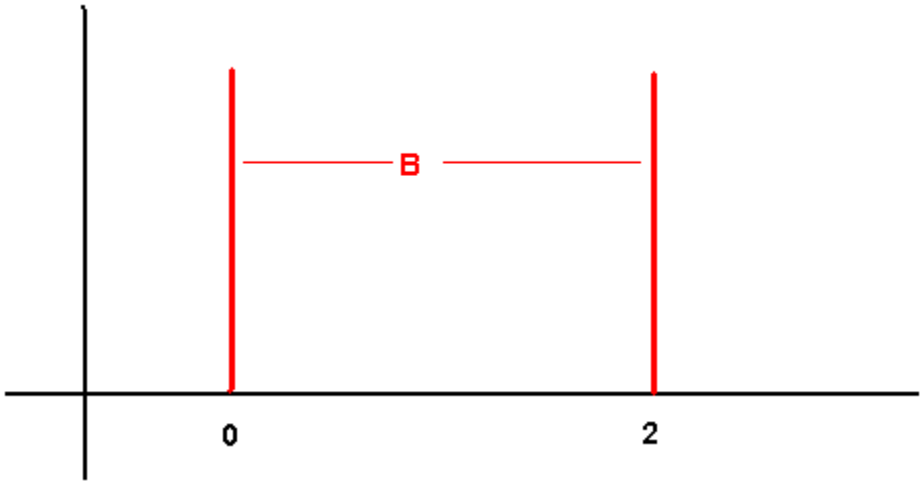


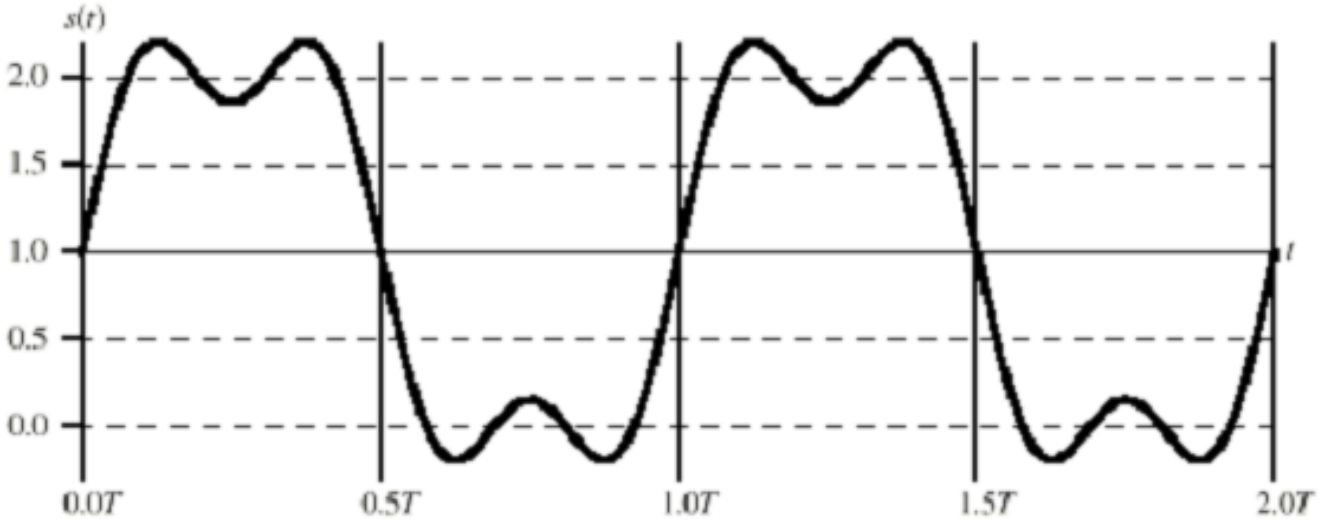
(b) S(*f*)

CANAL
TRANSMISIÓN

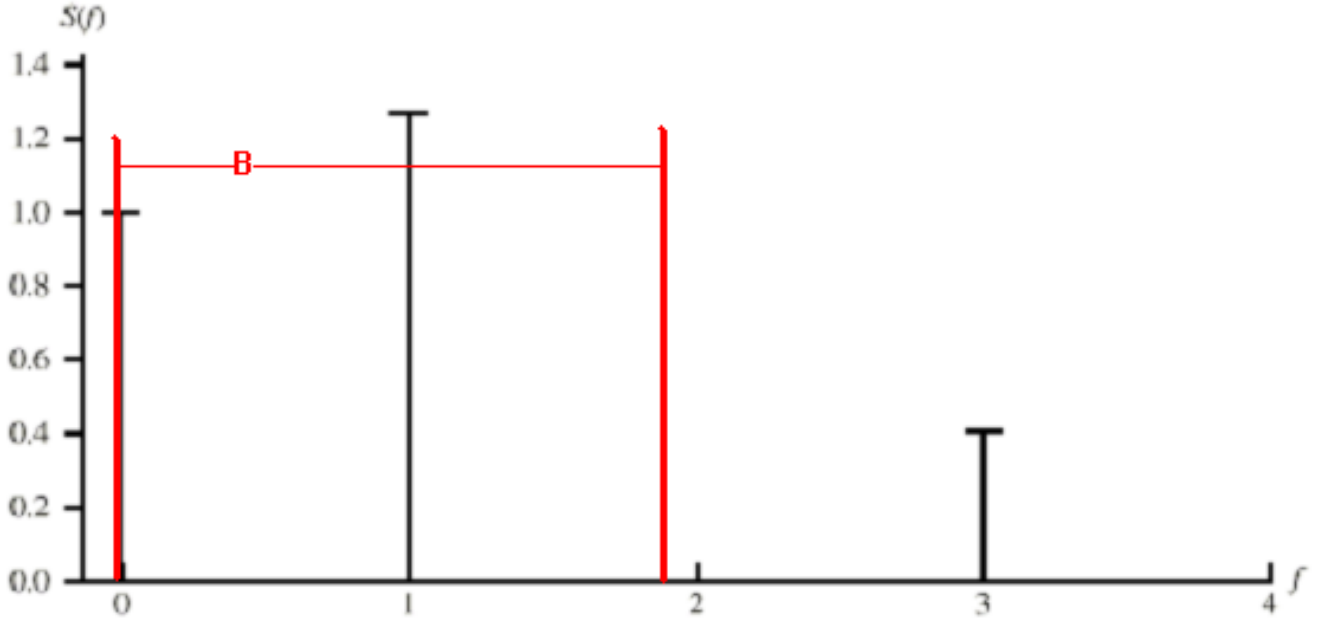
Extremo
Emisor

Extremo
Receptor

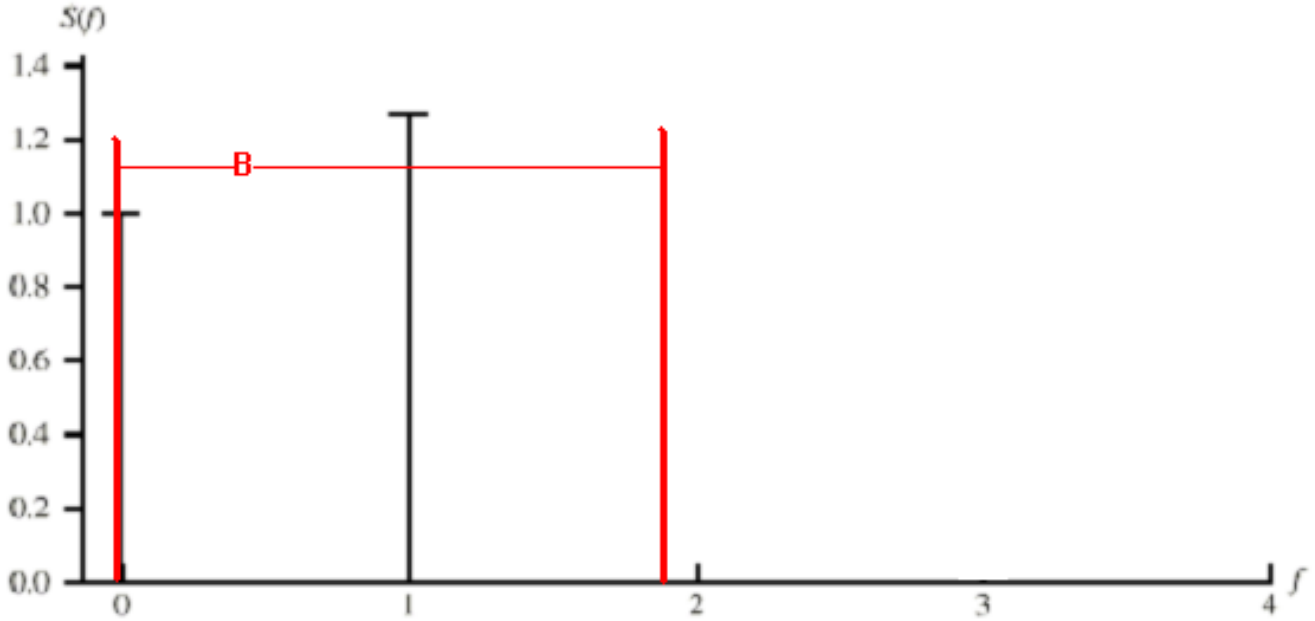




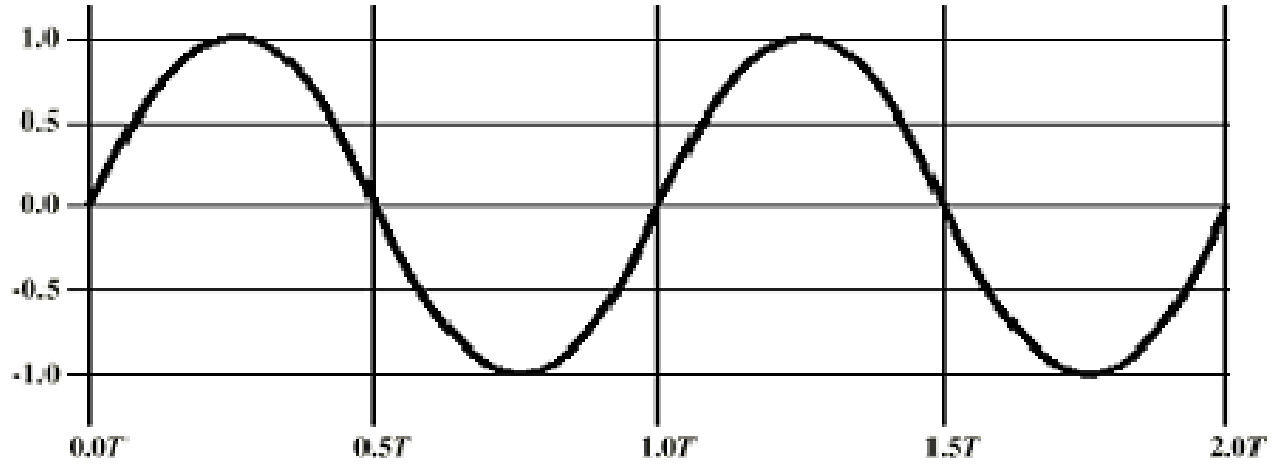
(a) $s(t) = 1 + (4/\ ) [\sin (2\ ft) + (1/3) \sin (2\ (3f)t)]$



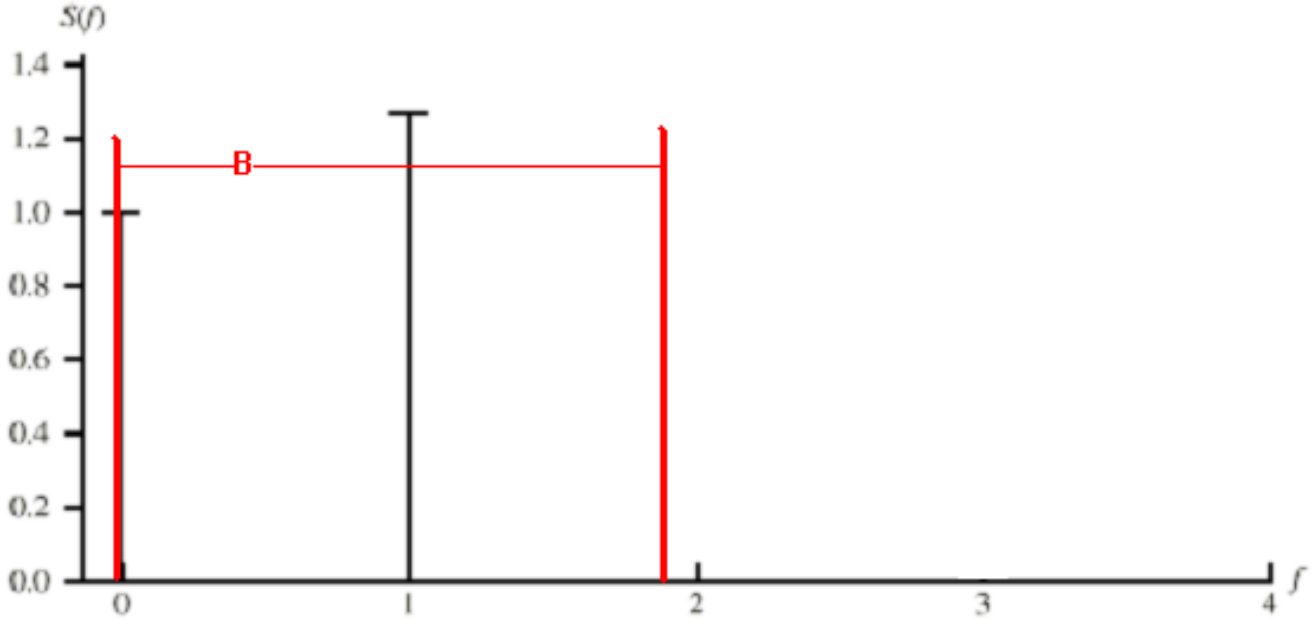
(b) $S(f)$



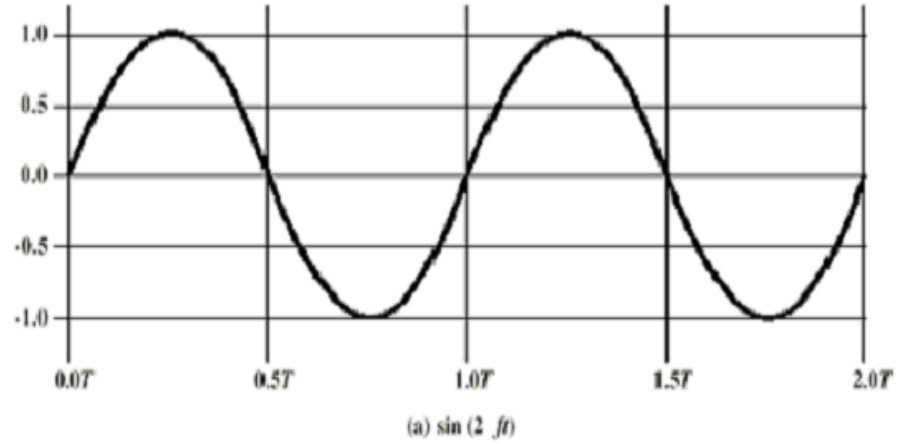
(b) S(*f*)


1.0
0.5
0.0
-0.5
-1.0
0.0T
0.5T
1.0T
1.5T
2.0T

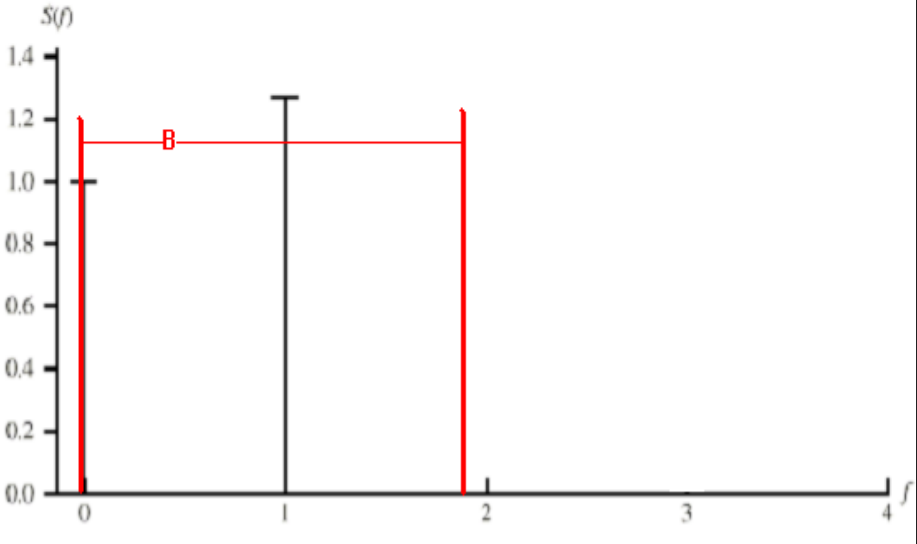
(a) sin (2 *ft*)


S(f)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
B
0
1
2
3
4
f

(b) S(*f*)

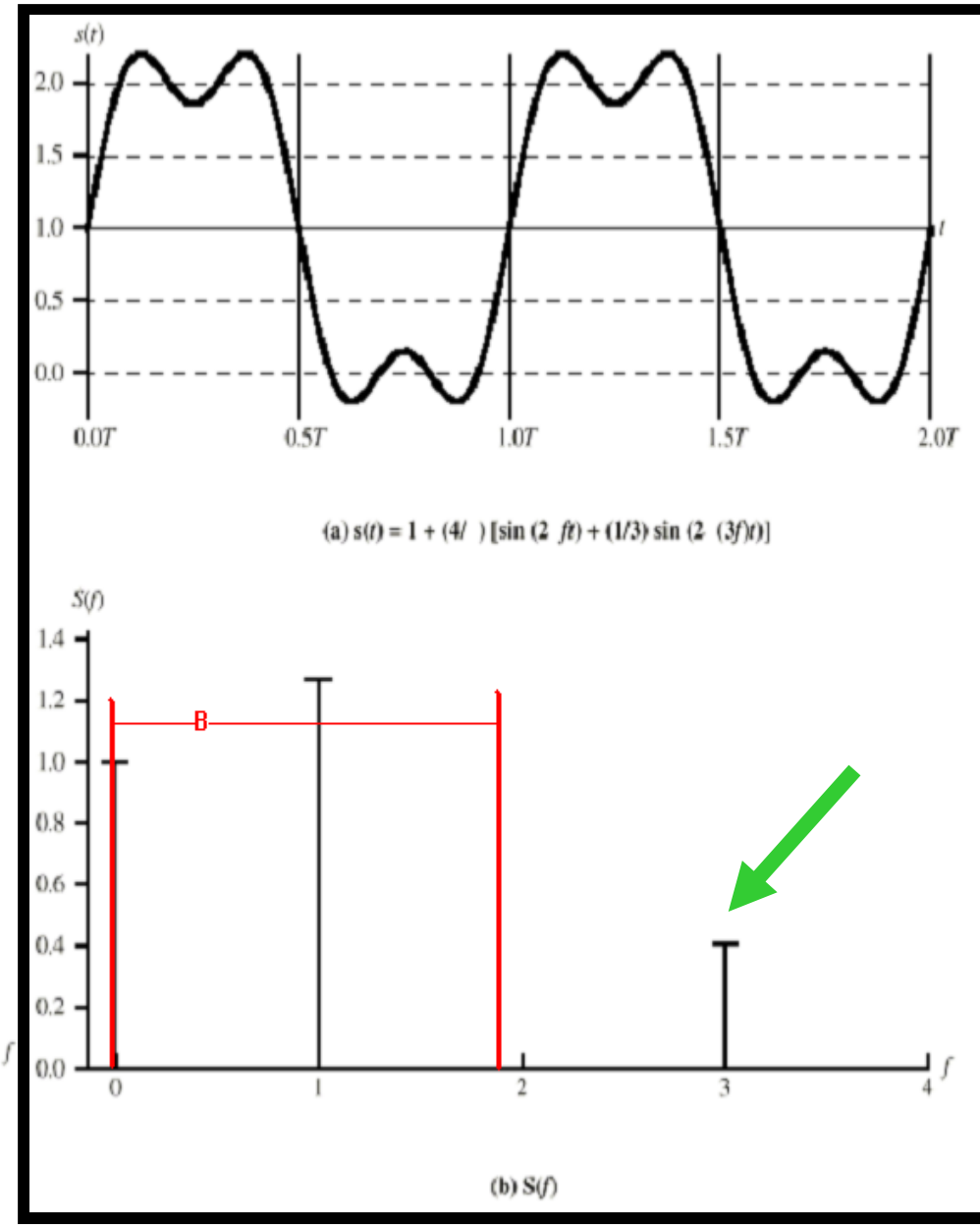


(a) sin (2 ft)



(b) S(f)

[Espectro y señal en destino]



(a) s(t) = 1 + (4/) [sin (2 ft) + (1/3) sin (2 (3f)t)]

(b) S(f)

[Espectro y señal en origen]