



RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

BCA-302 Computer Networks

Lecture-11

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OUTLINE

➤ **UNGUIDED MEDIA: WIRELESS**

➤ **PROPAGATION METHODS**

➤ **BANDS**

➤ **WIRELESS TRANSMISSION WAVES**

➤ **RADIO WAVES**

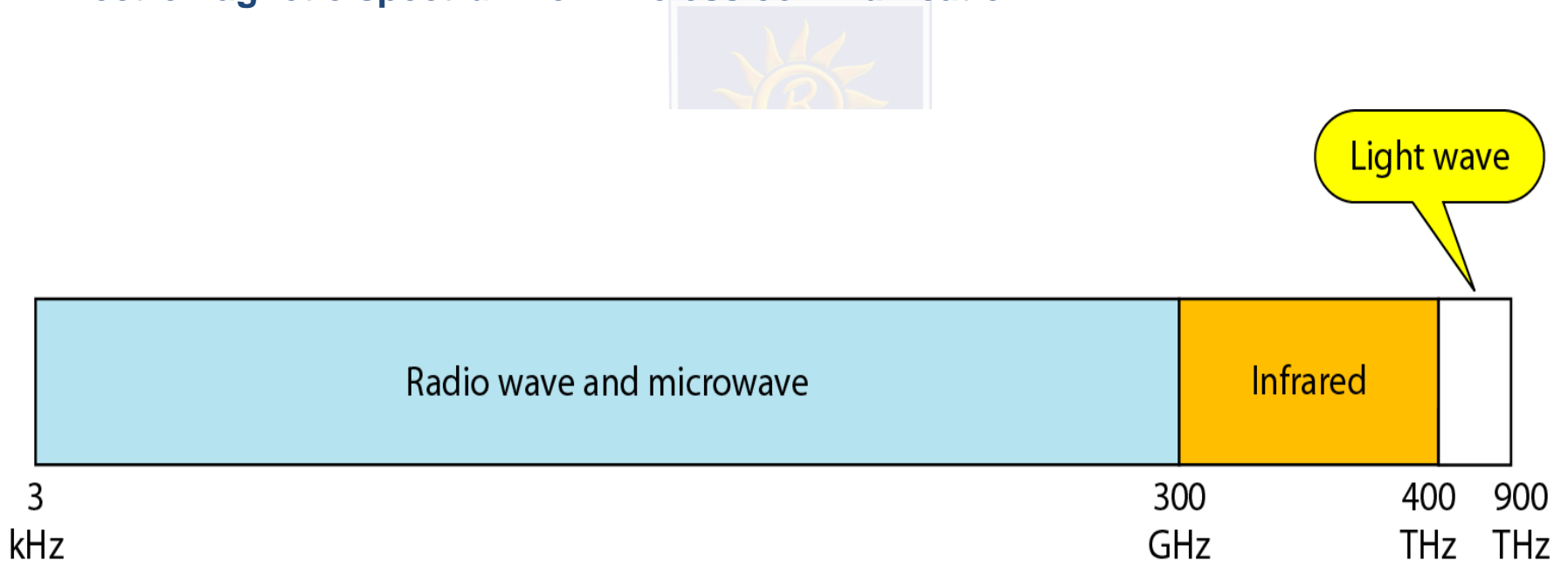
➤ **MICRO WAVES**



UNGUIDED MEDIA: WIRELESS

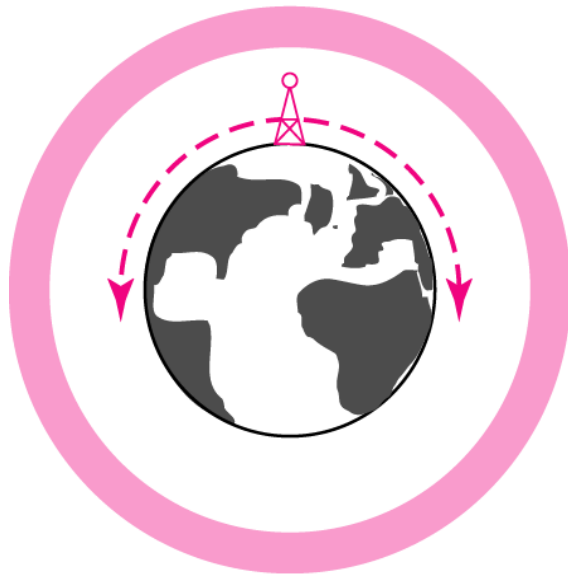
Unguided media transport electromagnetic waves without using a physical conductor. This type of communication is often referred to as wireless communication.

Electromagnetic spectrum for wireless communication



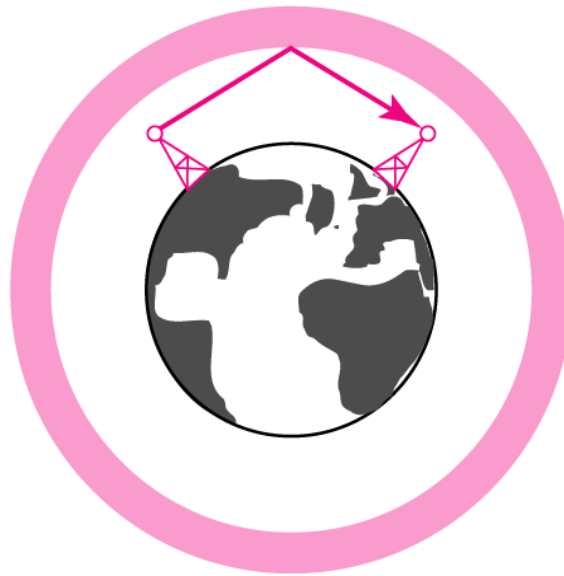
PROPAGATION METHODS

Ionosphere



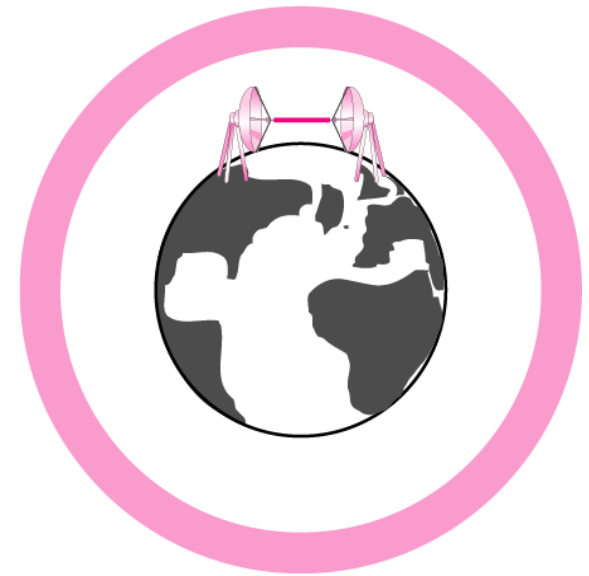
Ground propagation
(below 2 MHz)

Ionosphere



Sky propagation
(2–30 MHz)

Ionosphere

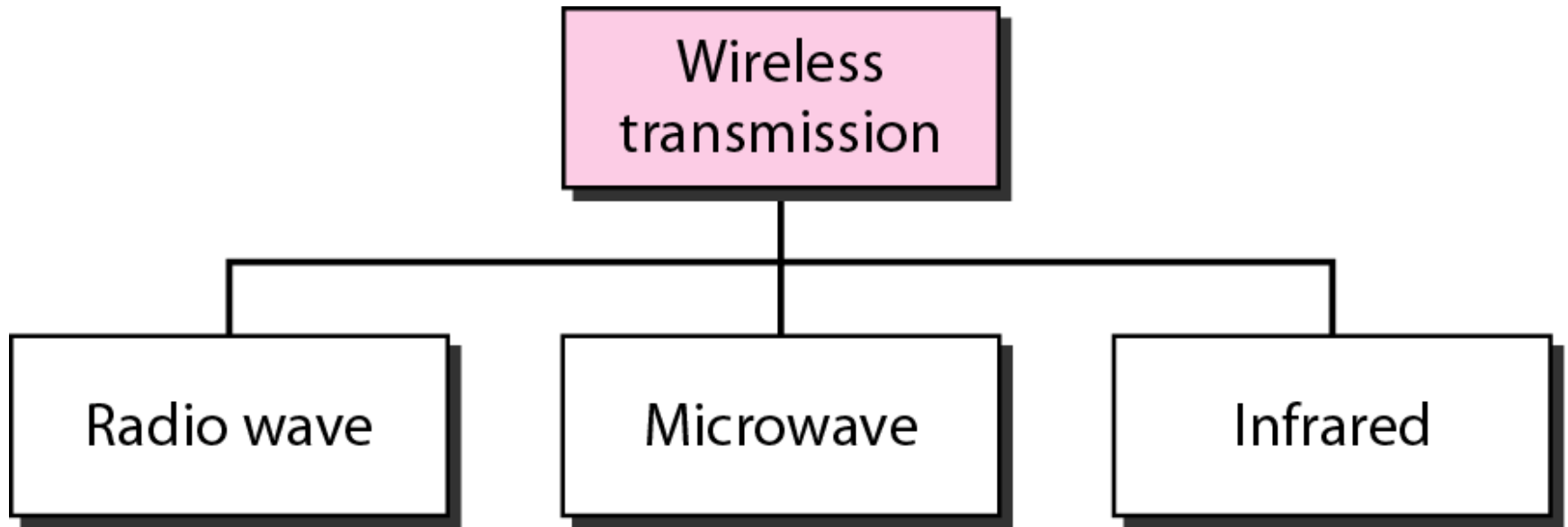


Line-of-sight propagation
(above 30 MHz)

BANDS

<i>Band</i>	<i>Range</i>	<i>Propagation</i>	<i>Application</i>
VLF (very low frequency)	3–30 kHz	Ground	Long-range radio navigation
LF (low frequency)	30–300 kHz	Ground	Radio beacons and navigational locators
MF (middle frequency)	300 kHz–3 MHz	Sky	AM radio
HF (high frequency)	3–30 MHz	Sky	Citizens band (CB), ship/aircraft communication
VHF (very high frequency)	30–300 MHz	Sky and line-of-sight	VHF TV, FM radio
UHF (ultrahigh frequency)	300 MHz–3 GHz	Line-of-sight	UHF TV, cellular phones, paging, satellite
SHF (superhigh frequency)	3–30 GHz	Line-of-sight	Satellite communication
EHF (extremely high frequency)	30–300 GHz	Line-of-sight	Radar, satellite

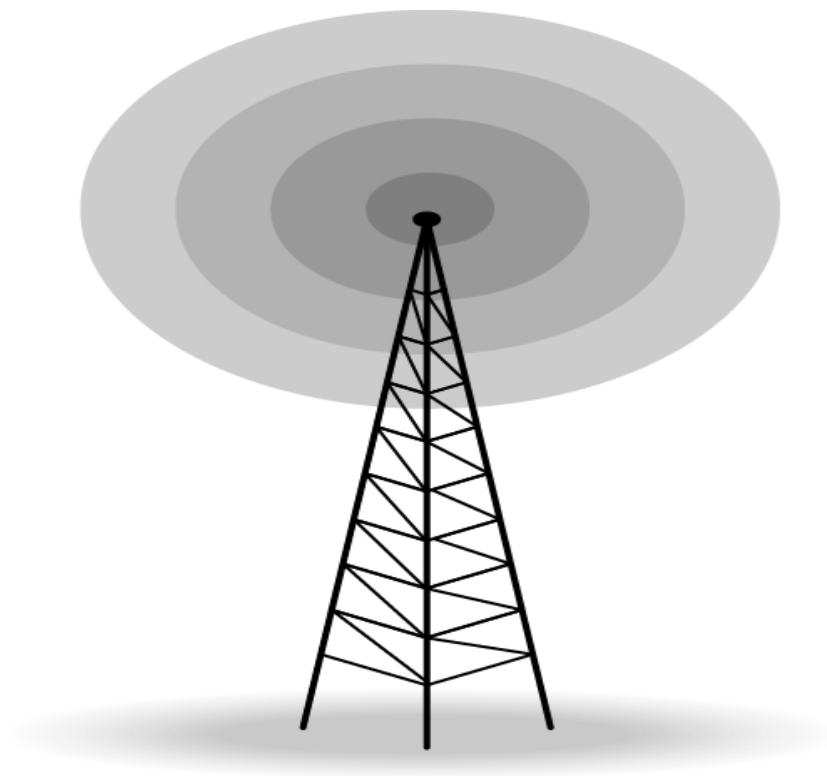
WIRELESS TRANSMISSION WAVES



RADIO WAVES

Radio waves are used for multicast communications, such as radio and television, and paging systems. They can penetrate through walls .Highly regulated. Use omni directional antennas

Omni directional antenna



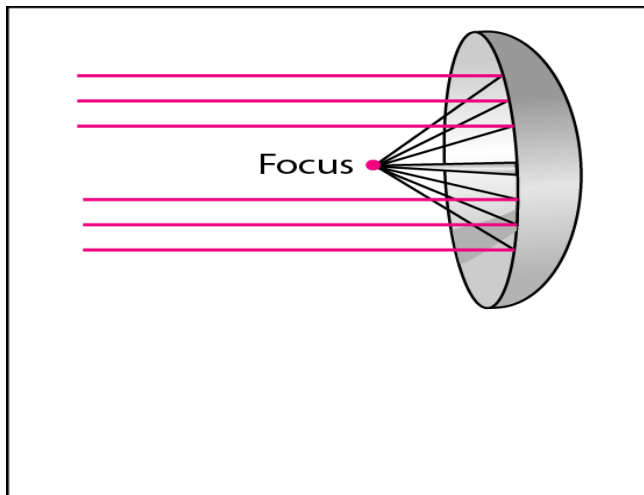
MICRO WAVES

Microwaves are used for unicast communication such as cellular telephones, satellite networks, and wireless LANs.

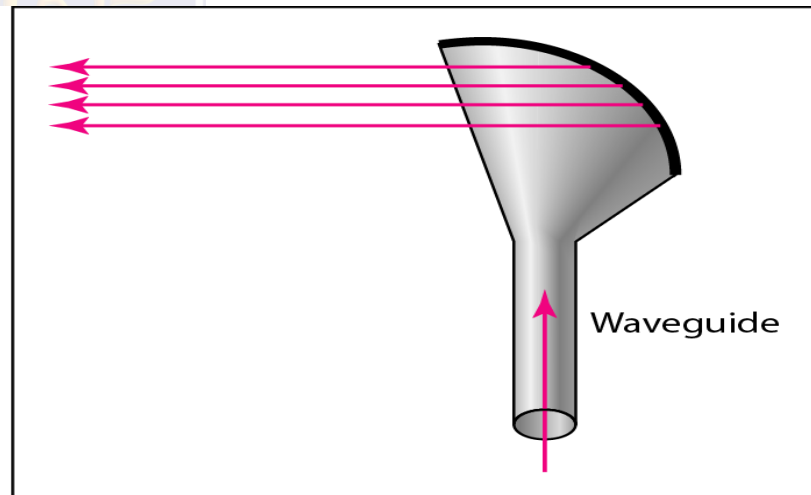
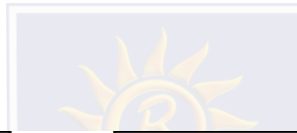
Higher frequency ranges cannot penetrate walls.

Use directional antennas - point to point line of sight communications

Unidirectional antenna



a. Dish antenna



b. Horn antenna

Multiple Choice Question

MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	A list of protocols used by a system, one protocol per layer, is called _____	protocol architecture	protocol stack	protocol suite	protocol system
2	Network congestion occurs _____	in case of traffic overloading	when a system terminates	when connection between two nodes terminates	in case of transfer failure
3	. Which of the following networks extends a private network across public networks?	local area network	virtual private network	enterprise private network	storage area network
4	In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are _____	Added	Removed	Rearranged	Modified
5	he structure or format of data is called _____	Syntax	Semantics	Struct	Formatting

REFERENCES

- <http://www.engppt.com/2009/12/networking-fourzan-ppt-slides.html>

