



# PHYSICS

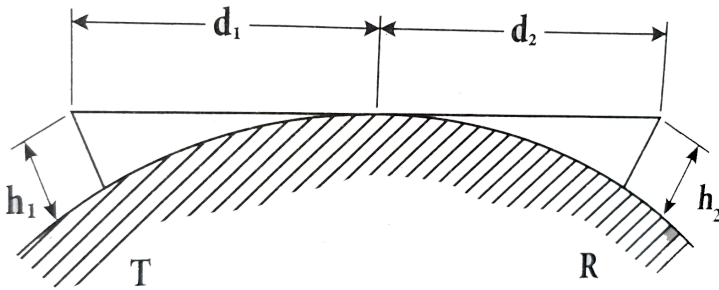
## BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

### COMMUNICATION SYSTEMS

#### In Text Solved Examples

1. A transmitting antenna has a height of 40 m and the height of the receiving antenna is 30

m. What is the maximum distance between them for line-of-sight communication? The radius of the earth is  $6.4 \times 10^6 m$



[Watch Video Solution](#)

Textual Evaluation Solved Multiple Choice  
Questions

1. The output transducer of the communication system converts the radio signals into \_\_\_\_\_

- A. Sound
- B. Mechanical energy
- C. Kinetic energy
- D. None of the above

**Answer: a**



**Watch Video Solution**

2. The signals is affected by noise in communication system

A. At the transmitter

B. At the modulator

C. In the channel

D. At the receiver

**Answer: c**



**Watch Video Solution**

3. The variation of frequency of carrier wave with respect to the amplitude of the modulating signal is called \_\_\_\_\_

A. Amplitude modulation

B. Frequency modulation

C. Phase modulation

D. Pulse width modulation

**Answer: b**



**Watch Video Solution**

4. The internationally accepted frequency deviation for the purpose of FM broadcasts.

A. 75 kHz

B. 68 kHz

C. 80 kHz

D. 70 kHz

**Answer: a**



**Watch Video Solution**

5. The frequency range of 3 MHz to 30 MHz is used for

- A. Ground wave propagation
- B. Space wave propagation
- C. Sky wave propagation
- D. Satellite communication

**Answer: c**



**Watch Video Solution**

1. Give the factors that are responsible for transmission impairments.



[Watch Video Solution](#)

2. Distinguish between wireline and wireless communication? Specify the range of electromagnetic waves in which it is used.



[Watch Video Solution](#)



3. Explain centre frequency or resting frequency in frequency modulation.



[Watch Video Solution](#)

4. What does RADAR stand for ?



[Watch Video Solution](#)

5. What do you mean by Internet of Things?



[Watch Video Solution](#)

[Textual](#)   [Evaluation](#)   [Solved](#)   [Long](#)   [Answer](#)  
[Questions](#)

1. What is modulation? Explain the types of modulation with necessary diagrams.



[Watch Video Solution](#)

[Textual](#)   [Evaluation](#)   [Solved](#)   [Long](#)   [Answer](#)  
[Questions](#)

1. Elaborate on the basic elements of communication system with the necessary block diagram.



[Watch Video Solution](#)

2. Explain the three modes of propagation of electromagnetic waves through space.

Propagation of electromagnetic waves:



[Watch Video Solution](#)

3. What do you know about GPS? Write a few applications of GPS.



**Watch Video Solution**

4. Write the application of ICT ?



**Watch Video Solution**

5. Modulation helps to reduce the antenna size in wireless communication-Explain.



**Watch Video Solution**

6. Fiber optic communication is gaining popularity among the various transmission media -justify.



[Watch Video Solution](#)

## Additional Questions Multiple Choice Questions

1. Which of the following frequencies will be suitable for beyond the horizon

communication using sky waves?

A. 10 kHz

B. 10 MHz

C. 1 GHz

D. 1000 GHz

**Answer: b**



**Watch Video Solution**

2. Frequency in the UHF range normally propagate by means of:

A. Ground waves

B. sky waves

C. surface waves

D. space waves

**Answer: d**



**Watch Video Solution**

3. An antenna is

A. inductive

B. capacitive

C. resistive above its resonant frequency

D. ) resistive at resonant frequency

**Answer: d**



**Watch Video Solution**

4. In frequency modulation



A. frequency varies with time

B. amplitude varies with time

C. both frequency and amplitude vary with  
time

D.) both frequency and amplitude are  
constant

**Answer: a**



**Watch Video Solution**

5. Laser light is considered to be coherent because it consist of

- A. many wavelengths
- B. uncoordinated wavelengths
- C. coordinated waves of exactly the same wavelength
- D. divergent beam

**Answer: c**



**Watch Video Solution**

6. The waves used by artificial satellites for communication purposes are

- A. microwaves
- B. AM radiowaves
- C. PM radiowaves
- D. X-rays

**Answer: a**



**Watch Video Solution**

7. An oscillator is producing FM waves of frequency 2 kHz with a variation of 10 kHz.

What is the modulation index?

A. 0.67

B. 5

C. 0.2

D. 1.5

**Answer: b**



**Watch Video Solution**

8. A laser beam is used for locating distant object because it

A. has small angular spread

B. is not absorbed

C. is coherent

D. is monochromatic

**Answer: a**



**Watch Video Solution**

9. In short wave communication, waves of which of the following frequencies will be reflected back by the ionospheric layer having electron density  $10^{11} m^{-3}$

A. 2 MHz

B. 10 MHz

C. 12 MHz

D. 18 MHz

**Answer: a**



**Watch Video Solution**

10. The maximum distance upto which TV transmission from a TV tower of height  $h$  can received is proportional to

A.  $h^{1/2}$

B.  $h$

C.  $h^{3/2}$

D.  $h^2$

**Answer: a**



**Watch Video Solution**

11. If the highest modulating frequency of the wave is 5 kHz, the number of stations that can be accommodated in a 150 kHz bandwidth is

A. 15

B. 10

C. 5

D. None of the above

**Answer: a**



**Watch Video Solution**



12. In communication with help of antenna if height is doubled, then the range covered which was initially  $r$  would become

A.  $\sqrt{2}r$

B.  $3r$

C.  $4r$

D.  $5r$

**Answer: a**



Watch Video Solution

13. A laser beam is used for carrying out surgery, because it

A. is highly monochromatic

B. is highly coherent

C. is highly directional

D. can be sharply focused

**Answer: d**



Watch Video Solution

14. The ozone layer is present in

A. troposphere

B. stratosphere

C. ionosphere

D. mesosphere

**Answer: b**



**Watch Video Solution**

15. Ozone layer blocks the radiation of wavelength

A. less than  $3 \times 10^{-7}$  m

B. equal to  $3 \times 10^{-7}$  m

C. more than  $3 \times 10^{-7}$  m

D. none of these

**Answer: a**



**Watch Video Solution**

**16.** What is the cause of Green house effect?

- A. Infrared rays
- B. ultraviolet rays
- C. X-rays
- D. radio waves

**Answer: a**



**Watch Video Solution**

17. Ozone layer in atmosphere is useful, because it

A. stops ultraviolet radiation

B. stops green house effect

C. stops increase in temperature of atmosphere

D. absorbs pollutant gases

**Answer: a**



**Watch Video Solution**

18. Biological importance of ozone layer is

A. ozone layer controls  $O_2/H_2$  ratio in atmosphere

B. it stops ultraviolet rays

C. ozone layer reduces green house

D. ozone layer reflects radio waves

**Answer: b**



**Watch Video Solution**

19. The particular used for transmission of light signal through optical fibre is

- A. total internal reflection
- B. refraction
- C. dispersion
- D. interference

**Answer: a**



**Watch Video Solution**



20. LANDSAT series of satellites move in near polar orbits at an altitude of

A. 3600 km

B. 3000km

C. 918km

D. 512km

**Answer: c**



**Watch Video Solution**

21. Which of the following is not a transducer?

A. loudspeaker

B. amplifier

C. microphone

D. all of these

**Answer: b**



**Watch Video Solution**

22. If a radio receiver amplifies all the signal frequencies equally well, it is said to have high

- A. fidelity
- B. distortion
- C. sensitivity
- D. selectivity

**Answer: a**



**Watch Video Solution**

23. The sky wave propagation is suitable for radio waves of frequency

A. a) from 2 MHz to 50

B. b) upto 2MHz

C. c) from 2 MHz to 30 MHz

D. d) from 2MHz to 20 MHz

**Answer: c**



**Watch Video Solution**

24. Refractive index of ionosphere is

A. a) zero

B. b) more than one

C. c) less than one

D. d) one

**Answer: c**



**Watch Video Solution**

25. When radio waves pass through ionosphere phase difference between space current and capacitive displacement current is

A. 0 rad

B.  $3\pi / 2$  rad

C.  $\pi / 2$  rad

D.  $\pi$  rad

**Answer: a**



**Watch Video Solution**

**26.** Advantages of optical fibres are

A. high bandwidth and EM interference

B. low bandwidth and EM interference

C. high bandwidth, low transmission capacity and no EM interference

D. high bandwidth, high data transmission capacity and no EM interference

**Answer: d**



**Watch Video Solution**

27. A TV tower has a height of 100 m. What is the maximum distance upto which the TV transmission can be received?  $R = 8 \times 10^6 m$

A. 34.77 km

B. 32.70 km

C. 40km

D. 40.70 km

**Answer: c**



**Watch Video Solution**



28. Modem is a device which performs

A. modulation

B. demodulation

C. rectification

D. modulation and demodulation

**Answer: d**



**Watch Video Solution**

29. Which of the following device is full duplex?

A. Mobile phone

B. walky-talky

C. loud-speaker

D. radio

**Answer: a**



**Watch Video Solution**

**30.** For a radio signal to travel 150 km from the transmitter to a receiving antenna, it takes

A.  $5 \times 10^{-4}$  second

B.  $4.5 \times 10^{-3}$  second

C.  $5 \times 10^{-8}$  second

D.  $4.5 \times 10^{-6}$  second

**Answer: a**



**Watch Video Solution**

## Additional Questions | Short Answer Questions

1. What is a communication system?



[Watch Video Solution](#)

2. Write down the advantages and limitations of amplitude modulation (AM)? Advantages of AM



[Watch Video Solution](#)

3. Write down the advantages and limitations of frequency modulation (FM)? Advantages of FM



[Watch Video Solution](#)

4. Write the advantage of PM ?



[Watch Video Solution](#)

5. Define Bandwidth.



[Watch Video Solution](#)

6. Define Bandwidth.



[Watch Video Solution](#)

7. What is meant by skip distance?



[Watch Video Solution](#)

8. What is skip zone or skip area.



[Watch Video Solution](#)

9. What is mean by fibre optic communication?



[Watch Video Solution](#)

10. Write down the application of ICT in Fisheries? Fisheries.



[Watch Video Solution](#)

**11.** Explain the concept of satellite communication? Write its applications.



**Watch Video Solution**

**12.** What is meant by mobile communication ?



**Watch Video Solution**

**13.** What do you know about INTERNET? Write its few applications?





[Watch Video Solution](#)

## Additional Questions Additional Problems

1. A radio can tune into any station in the 7.5 MHz to 12 MHz band. What is the corresponding wavelength band ?



[Watch Video Solution](#)

2. A TV transmitting antenna is 125 m tall. How much service area can this transmitting antenna cover, if the receiving antenna is at the ground level? Radius of earth-6400 km



[Watch Video Solution](#)

3. A transmitting antenna at the top of a tower has a height 32 m and that of the receiving antenna is 100 m. What is the maximum distance between them for

satisfactory communication in LOS mode?

Given radius of earth  $6.4 \times 10^6$  m



**Watch Video Solution**