



PHYSICS

BOOKS - MBD -HARYANA BOARD

PRINCIPLES OF COMMUNICATION

Very Short Answer Type Questions

1. Name three basic units of any communication system.



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2. Modem is a contraction of two terms. Name these two terms.



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3. What is transducer ? How is it used ?



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4. Explain transducer.



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5. What does the term communication signify ?



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6. Explain the term modem.



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7. What is the function of a modem ?



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8. What is MODEM ?



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9. In which medium out of conductor, semiconductor and perfect dielectric, the wave propagation occurs without attenuation ?



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10. Which is more advantageous: amplitude modulation or frequency modulation ?



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11. What is meant by the term remote sensing?



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12. What do you mean by frequency deviation ?



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13. Calculate the length of half wave dipole
antenna at 80MHz . Given $c = 3 \times 10^8\text{ms}^{-1}$.



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14. What is the principal of optical fibre ?



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15. What is meant by digital signal ?



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16. What are ground waves ?



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17. What is meant by fading in communication system ?



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18. Calculate the length of half wave dipole at 60MHz . Given $c = 3 \times 10^8\text{ms}^{-1}$.



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19. Name two optical sources used in optical communication.



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20. Name an appropriate communication channel needed to send a signal of band width 100kHz over a distance of 8 km.



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21. Is delta modulation digital or analog ?



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22. What do you mean by cladding ?





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23. For what purposes Fax is used ?



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24. What is sky wave ?



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25. What is a byte ?





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26. What does a modem represent?



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27. From which layer of the atmosphere, radio waves are reflected back?



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28. Name the band to which electromagnetic wave of frequency 120 MHz belongs.



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29. Calculate the length of half wave dipole antenna at 40MHz . Given $c = 3 \times 10^8\text{ms}^{-1}$.



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30. In an electronic communication system, what is attenuation ?



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31. Name some analog communication system.



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32. Name the latest digital communication system.



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33. What is meant by radio communication ?



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34. What do you mean by modulation ? What are its types ?



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35. What is modulation ? Explain its necessity giving example of size of antenna.



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36. What is modulation and why it is needed ?



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37. What is demodulation ?



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38. Explain amplitude modulation ?



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39. What is frequency modulation ?



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Short Answer Type Questions

1. In an electronic communication system define modulation.



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2. Explain the term 'Channel' in a communication system.



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3. What do you understand by a complex or a composite signal ? Explain frequency spectrum and band width.



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4. What is modulation and demodulation ?



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5. What is demodulation ?



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6. What is modulation ? Briefly explain three reasons which make modulation an essential step in communication system.



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7. Why modulation is necessary ?



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8. What is modulation? Explain its necessity.



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9. Explain the term modulation index for $F.M.$ and $F.M.$ band width. Give the advantages of frequency modulation.



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10. Explain Amplitude modulation and AM Band width. Give a few advantages of AM.



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11. Find the expression for coverage distance and height of transmitting antenna.



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12. Establish a relation between coverage distance and height of transmitting antenna.



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13. Deduce an expression for the distance from which the T.V. signals can directly be received from a T.V. tower of height h .



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14. 'Greater the height of T.V. transmitting antenna, greater is its range.' Prove.



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15. what is a ground wave or surface wave ?



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16. Why sky wave propagation of electromagnetic waves cannot be used for T.V.

transmission ? Suggest two methods for transmission of T.V. programmes.



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17. A T.V Tower has a height of 300m. What is the maximum distance upto which this T.V. transmission can be received ?



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18. Briefly explain the two ways by which radio waves are propagated in atmosphere.



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19. What is meant by 'remote sensing' ?

Mention any two applications of remote sensing.



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20. What do you understand by active and passive satellites ?



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21. What is the basic difference between an analog communication system and a digital communication system?



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22. Explain surface wave propagation of radio waves. Why does this method fail in case of short waves ?



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23. Why short wave communication over long distance are not possible by surface wave propagation ?



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24. A radar has a power of $1kW$ and is operating at a frequency of $10GHz$. It is located on a mountain top of height $500m$. The maximum distance upto which it can detect object located on the surface of the earth (Radius of earth 6.4×10^6m) is



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25. A T.V. tower has a height $150m$. What is the population density around the T.V. tower if the

total population covered is 50 lakh? (Radius of earth = $6.4 \times 10^6 m$)



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26. Why is it necessary to use satellites for long distance TV transmission?



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27. Explain that microwaves are better carriers of signals than radio waves?



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28. What is modulation ? Explain amplitude Modulation with a diagram.



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29. Draw a block diagram to obtain amplitude modulated wave.



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Long Answer Type Question

1. Explain amplitude modulation. Derive the voltage equation of an amplitude modulated wave.



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Objective Type Questions

1. The sky wave propagation is suitable for radiowaves of frequency

A. upto $2MHz$

B. from $2MHz$ to $20MHz$

C. from $2MHz$ to $30MHz$

D. None of them.

Answer: C



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2. Ozone layer is present in

A. Stratosphere

B. Troposphere

C. Mesosphere

D. Ionosphere.

Answer: A



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3. INSAT-IA satellite is used for :

A. Radio communication

B. Radar communication

C. Intercontinental communication

D. None of them.

Answer: C



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4. A TV tower of height h can broadcast program upto a distance (given radius of earth R):

A. Rh

B. $2Rh$

C. $\sqrt{2Rh}$

D. \sqrt{Rh} .

Answer: C



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5. In UHF range the frequencies are propagated by means of :

A. surface waves

B. sky waves

C. space waves

D. ground waves.

Answer: C



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6. The diameter of an optical fibre is :

A. $10^{-5}m$

B. $10^{-4}m$

C. 10^{-3} cm

D. 10^{-2} cm .

Answer: B



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7. In the process of modulation, the radio frequency wave is known as

A. modulating wave

B. modulated wave

C. carrier wave

D. None of the above.

Answer: C



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8. Ozone layer in atmosphere is useful because

it :

A. stops ultraviolet radiation

B. stops greenhouse effect

C. stops increase in temperature of atmosphere

D. absorbs polluted gases.

Answer: A



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9. The height of a T.V. tower is $100m$. If radius of earth is $6400km$, then what is the maximum distance of transmission from it ?

A. $100km$

B. $64\sqrt{10}km$

C. $6.4\sqrt{10}km$

D. $8\sqrt{20}km.$

Answer: D



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10. The most commonly used system of modulation for telegraphy is :

A. on-off keying

B. frequency shift keying

C. analog modulation

D. pulse code modulation.

Answer: A



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11. Ionosphere can reflect which type of waves

?

A. Microwaves

B. Radiowaves

C. X-rays

D. y-rays

Answer: B



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12. For television transmission, the frequency employed is normally in the range :

A. $30 - 300\text{MHz}$

B. $30 - 300\text{GHz}$

C. $300 - 300\text{kHz}$

D. $30 - 300\text{Hz}$.

Answer: A



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13. The electromagnetic waves used in the telecommunication are

A. ultraviolet

B. infrared

C. visible

D. microwaves.

Answer: D



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14. the attenuation in optical fibre is mainly due to
to

A. scattering

B. absorption and scattering

C. dispersion

D. None of the above.

Answer: B



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15. The output from a LASER is monochromatic. It means that it is :

A. directional

B. polarised

C. narrow beam

D. single frequency.

Answer: D



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16. Radio waves of frequency

$300MHz - 3000MHz$ belongs to :

- A. high frequency band
- B. very high frequency band
- C. ultra high frequency band
- D. super high frequency band.

Answer: C



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17. A TV tower has a height of 100m. By how much the height of tower be increased to triple its coverage range.

A. $700m$

B. $740m$

C. $780m$

D. $800m$

Answer: D



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18. Radio waves of constant amplitude can be generated with:

A. Filter

B. Rectifier

C. F.E.T.

D. Oscillator.

Answer: D



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19. Radio waves are reflected from which layer of atmosphere ?

A. Mesosphere

B. Chromosphere

C. Ionosphere

D. None.

Answer: C



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