SHIKSHA CLASSES

Question Paper

Subject : Physics **Total Marks :20**

Class : XI **13 : Electromagnetic Waves and Communication System** **Time : 1 Hour**

SECTION - A

Q.1 : Choose the correct option : 4

i) How does the frequency of a beam of ultraviolet light change when it travels from air into glass?

a) depends on the values of p and e

b) increases c) decreases

d) remains same

ii) The maximum distance upto which TV transmission from a TV tower of height h can be received is proportional to

a) $h^{1/2}$ b) h

c) $h^{3/2}$ d) h^2

iii) Earth's atmosphere is richest in ------.

a) UV b) IR

c) X-ray d) Microwaves

iv) If a TV telecast is to cover a radius of 640 km, what should be the height of transmitting antenna?

a) 32000 m b) 53000 m c) 42000 m d) 55000 m

Q.2 : Answer the following : 2

i) What is bandwidth?

ii) Define carrier wave.

Section B

: Answer the following : (ANY 2) 4

Q.3 : Calculate the velocity of EM wave in vacuum.
[$\mu_0 = 4\pi \times 10^{-7}$ Tm / A, E0 = 8.85×10^{-12} C / Vm^2]

Q.4 : How are X-rays generated? State ant two properties and uses.

Q.5 : State the different types of modulation.

SECTION C

: Answer the following : (ANY 2) 6

Q.6 : State any six characteristics of EM waves.

Q.7 : Explain the following terms :

i) Space wave propagation.

ii) Sky wave propagation.

Q.8 : A transmitting antenna at the top of a tower has a height 36 m and that of the receiving antenna is 60 m. What is the maximum distance between them for satisfactory communication in line of sight mode? radius of earth is 6.4×10^6 m

SECTION D

: Answer the following : (ANY 1) 4

Q.9 : Explain the following terms :

i) Transducer

ii) Attenuation

iii) Amplification

iv) Range

Q.10 : Calculate the maximum distance upto which RADAR can defect object located on the surface of the Earth. It has a power of 10 KW and is operating at a frequency of 20 GHz. It is located on the top of a hill of height 400 m. (Radius of Earth = 6.4×10^6 m)

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