



XI-SCI : Physics
Electromagnetic Waves and Communication System,

DATE:

TIME: 1 hour 30
minutes

MARKS: 25

SEAT NO:

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Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer.

(4)

1. How does the frequency of a beam of ultraviolet light change when, it travels from air into glass?
A) no change B) increases
C) decreases D) remains same
2. Earth's atmosphere is richest in
A) UV B) IR
C) X-ray D) Microwaves
3. 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
4. The direction of EM wave is given by
A) $\vec{E} \times \vec{B}$ B) $\vec{E} \cdot \vec{B}$
C) along \vec{E} D) along \vec{B}

Q.2 Answer the following.

(3)

1. What types of modulation is required for television broadcast?
2. What is meant by noise?
3. Define : Communication system

Section B
Attempt any Four

- Q.3 Explaining properties of γ -rays. **(2)**
- Q.4 What do you mean by transducer? **(2)**
- Q.5 Explain sky wave propagation. **(2)**
- Q.6 Give uses of X-rays. **(2)**
- Q.7 The amplitude of the magnetic field part of a harmonic EM wave in vacuum is $B_0 = 5 \times 10^{-7}$ T **(2)**
What is the amplitude of the electric field part of the wave?
- Q.8 If magnetic field of an EM wave is 2×10^{-7} T then, what is the rule of its electric field? **(2)**

Section C
Attempt any Two

- Q.9 How are EM waves produced? (3)
- Q.10 Explain space wave propagation. (3)
- Q.11 Height of a TV tower is 600 m at a given place. Calculate its coverage range if the radius of the Earth is 6400 km What should be the height to get the double coverage area? (3)

Section D
Attempt any One

- Q.12 List some advantages and disadvantages of amplitude modulation. (4)
- In a EM wave the electric field oscillates sinusoidally at a frequency of 2×10^{10} Hz What is the wavelength of the wave?
- Q.13 Draw a neat diagram showing propagation of EM wave. Explain its sinusoidal nature. (4)