

Printed Pages : 3



EEC029

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 121654

Roll No.

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B. Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15

ANTEENA & WAVE PROPOGATION

Time : 2 Hours]

[Total Marks : 50

Note : Attempt all problem.

1 Answer any four parts of the following : $3.5 \times 4 = 14$

- (a) Calculate the radiation resistance of antenna length of $\lambda/2$, $\lambda/4$, λ/θ and λ .
- (b) Discuss Gain, Power Gain, Directive Gain, Directivity.
- (c) Explain reciprocity theorem in brief.
- (d) Differentiate in between Near and Far Field.
- (e) Calculate the directivity of antenna whose pattern is given by $\phi = \phi_m \sin^2 \theta \sin^2 \phi$, $0 \leq \theta \leq \pi$ & $0 \leq \phi \leq 2\pi$.
- (f) Justify "Antenna is transducer".

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- 2 Answer any two parts of the following : $6 \times 2 = 12$
- (a) Differentiate among Broadside, Endfire, Binomial and Chebyshev array.
 - (b) Draw the radiation pattern of four isotropic point separated at the distance of $\lambda/4$ in broad side sense. Discuss pattern multiplication theorem.
 - (c) Prove that Gain and Aperture can be related as $A_e = G(\lambda^2/4\pi)$.
- 3 Answer any two parts of the following : $6 \times 2 = 12$
- (a) Discuss the operation of parabolic Reflector. What is spill over ? How it is removed ? Discuss Cassegrain feeds also.
 - (b) Discuss Rumsey principles. Where it is used ? Name that antenna after explaining the operation and characteristics and other use.
 - (c) Discuss the designing of Yagi-Uda antenna and Explain its limitations.
- 4 Answer any one part of the following : $12 \times 1 = 12$
- (a) Discuss the operation of ionosphere. Prove that refractive index is given by $\mu = \sqrt{1 - (81N/f^2)}$ where N is concentration of ions and f is operated frequency.

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(b) Explain :

- (1) Skip distance
- (2) Duct propagation
- (3) Maximum unusable frequency
- (4) Fading
- (5) Critical frequency.

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