Printed Pages :

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EEC-504

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

PAPER ID : 131504

Roll No.

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2014-15

Antenna and Wave Propagation

Time : 2 Hours] ***[Total Marks : 50***

Note: Attempt ALL questions.

1. Attempt any Two questions (5x2=10)

(a) Show that the radiation resistance of a wire dipole is given by $R_{rad} = 80\pi^2\left(\frac{dl}{\lambda}\right)^2$, where dl is the small length of wire dipole. Also if operating frequency of a half wave is 400 MHz, find its effective area.

(b) What is the power radiated by a current element.

(c) What is the effective length of linear antenna?

2. Attempt any Two questions (5x2=10)

(a) Explain the Non resonant antenna (Rhombic antenna) and show its radiation pattern. Why it is called broadband antenna?

(b) Explain the construction and principle of pyramidal horn antenna. A pyramidal horn antenna having aperture dimensions of a=5.2 cm and b=3.8 cm is used at a frequency of 10 GHz. Calculate its gain and half power beam widths.

(c) Derive the expression for field pattern of broad side array of n point sources.

3. Attempt any Two questions (5x2=10)

(a) With neat diagram explain helical antenna and briefly describe its operation in axial mode. How does it differ from other antennas?

(b) Explain the structure of microstrip antenna. Discuss its feed mechanisms and application.

(c) Explain in brief the working of the Log-periodic Antenna with two applications.

4. Attempt any Two questions (5x2=10)

(a) Draw a neat block diagram for antenna radiation pattern measurement. Explain the procedure in detail.

(b) Two identical vertical radiators are spaced $4/\lambda = d$ meters apart and fed with current of equal magnitude but with a phase difference 'β'. Evaluate the resultant radiation for '$\beta' = 0^0$ and thereby identify the direction of maximum and minimum radiation.

(c) Explain feed methods of parabolic reflectors in detail.

5. Attempt any Two questions (5x2=10)

(a) Write down the differences between space wave and surface wave. Also write the Application of Space wave and Surface wave.

(b) Explain ducting effect. Under what conditions this effect takes place ?

(c) Define and explain the following:

(I) Skip Zone

(II) Optimum working frequency

(III) Multihop propagation

(IV) Whistlers.

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