ELTL/RFMA/Ⅰ/CBGS/03-12-2016

Q.P. Code : 588000

RF Modelling & Antennas

(3 Hours)

[Total Marks 80]

N.B. 1) Question No.1 is Compulsory.
  2) Solve any three questions from the remaining.
  3) Assume suitable data wherever necessary and justify the assumption.
  4) Draw suitable diagrams wherever required.

1. a) Compare Binomial filter and chebyshev filter.   05
  b) Compare Broadside and Endfire array.   05
  c) find the gain of an Antenna when physical aperature is $5m^2$ at 2GHz with efficiency 70%.   05
  d) Compare monopole, Dipole and folded dipole antenna.   05

2. a) Design a composit high pass filter by image parameter method with the following specification.   10
      $R_o = 75 \, \Omega$, $f_c = 50$ MHz, $f_\infty = 48$ MHz.
  b) Derive rediation resistance of small dipole. Explain its significance.   10

3. a) Derive Friss transmission formula state its significance in wireless communicaiton.   10
      What is maximum power received at a distance of 0.75 km over free space for 1GHz frequency.
      The system consist of transmitting antenne with 3dB gain and receiving antenna with 17dB gain
      and antenna is fed with 200 W power.
  b) Explain the structure and functioning of Yagi Uda antenna.   10

4. a) Find the radiation pattern for an array of 4 elements fed with same amplitude and opposite   10
      phase. Find its HPBW and BWFN.
  b) Draw the structure of microstrip antenna. Discuss its characteristics, limitations and applications.   10

5. a) Describe parabolic reflector antenna and its different feeding methods.   10
  b) Explain important features of loop antenna. Discuss use of loop antenna in radio direction   10
      finding.

6. Write short notes on :   20
  a) RF field effect transistor
  b) Binomial array
  c) RF behavior of capacitor and inductor
  d) Helical antenna

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