T.E. sem V CBSGS NOV|Dec-2015
EXTC - 1-12-15
sub:- RF modeling & Antennas.

Q.P. Code : 5662

(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.

1a. Explain hazards of electromagnetic radiation. 5

b. Find the attenuation of a 4 element 2.5 db ripple low pass Chebyshev filter at $\omega/\omega_c=2.5$ 5

c What are isotropic pattern and Omnidirectional pattern.Give one example for each. 5

d. Explain near and far field radiation related to antenna

2a. Discuss design procedure for filter using image parameter method. 10

2b. Design a LPF whose input and output ports are matched to 50 Ω impedance with cutoff frequency of 3 GHz, equi ripple of 0.5 dB and rejection of atleast 40 dB at approx twice the cutoff frequency. 10

3a. Explain significance of retarded magnetic vector potential and retarded electric scalar potential. 10

3b. Derive radiation resistance of half wave dipole antenna and a monopole antenna 10

4a. Find the radiation pattern for an array of 4 elements fed with same amplitude and same phase.Find its HPBW and BWFN.

4b. State and prove Reciprocity theorem as applicable to antennas.

5a Design Dolph- TChebyshev array of 6 elements with spacing 'd' between elements with a major to minor lobe ratio of 26 dB. Calculate the excitation coefficients. 10

5b. Explain the structure of Microstrip antenna. Discuss its feed mechanisms and applications. 10

6 Write short notes on the following.
a. Log periodic antenna.
b. Schottky diode.
c. Broad side and End fire array.
d.Feeding methods of Parabolic antenna.
