QP Code : **14910**

(3 Hours) [Total Marks : 80

N. B. : (1) Question No. **1** is **compulsory**.
       (2) Attempt any **3** (three) out of the remaining **5** (five) questions.
       (3) Assume suitable data wherever necessary. Justify the assumption.
       (4) Draw suitable diagrams wherever necessary.

1. (a) Compare striplines and Microstrip lines.   5
   (b) Explain the significance of Retarded magnetic vector potential and Retarded   5
      electric Scalar potential.
   (c) With suitable example explain pattern Multiplication for Antenna Arrays.   5
   (d) Explain how Richard's Transformation and unit elements are useful in RF filter   5
      designing.

2. (a) Explain with equivalent circuits the RF behavior of Resistor, Inductor and   10
      Capacitor.
   (b) Design a maximally flat LPF with a cut-off frequency of 2GHz; generator and   10
      Load Impedance of 50 Ω; and with 15 dB Insertion Loss at 3 GHz with discrete
      LC components.

3. (a) Using Image Parameter method design a Low-pass composite filter with a cut-   10
      off frequency 2 MHz and Impedance of 75 Ω. Place the Infinite attenuation pole
      at 2.05 MHz.
   (b) Derive Array factor of N-element liner array, where all elements are equally fed   10
      and spaced. Also find the expression for the position of principle maxima, nulls
      and secondary maxima.

4. (a) Design a broadside Dolph-TChebyshev array of 6 elements with spacing 'd'   10
      between the elements and with a major to minor lobe ratio of 26 dB. Calculate
      the excitation coefficients.
   (b) Explain the working principle of Yagi-Uda Antenna and draw its radiation pattern.   10
      Mention its applications.

5. (a) Explain the structure of Microstrip Antenna. Discuss its feed mechanisms and   10
      Applications.

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[**TURN OVER**