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BIELE-004

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

00989

December, 2017

BIELE-004 : RF CIRCUITS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Missing data may be suitably assumed. Use of scientific calculators is permitted.*

1. Explain the characterization of the following IC components at Radio Frequency (RF) : *5+5=10*

(a) Resistors

(b) Inductors

2. Determine the impedance [Z] and the admittance [Y] matrix for a generic pi-network when represented as a two-port network. *5+5=10*

3. Describe the classical two-port noise theory with necessary mathematical expressions. *10*

4. What are Low Noise Amplifiers (LNA) ? Explain LNA topologies in detail. *3+7=10*

5. Explain the large signal performance of an LNA with the help of a neatly labelled diagram. *10*

6. What are RF power amplifiers ? Discuss in detail, the operation of a class-B RF power amplifier. *3+7=10*

7. How is the process of modulation carried out in power amplifiers ? Explain with the help of a suitable example. *10*

8. What are Oscillators ? Give the criterion for a circuit to act as an oscillator. Explain the various applications of oscillators. *2+3+5=10*

9. Write short notes on any ***two*** of the following : *2×5=10*

   (a) Interconnectors at RF

   (b) Diode Ring Mixers

   (c) Noise Model for Resistors

   (d) Combination Synthesizers