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BIELE-004

00545

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

Term-End Examination

June, 2019

BIELE-004 : RF CIRCUITS

Time : 3 hours *Maximum Marks : 70*

Note : *(i) Attempt **any seven** questions.*

(ii) Missing data may be suitably assumed.

*(iii) **All** questions carry **equal** marks.*

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1. (a) Explain IEEE frequency spectrum on the basis of frequency band, frequency and wavelength. **5**

   (b) Compute the intrinsic wave impedance, phase velocity and wavelengths of an electromagnetic wave in free space for the frequencies $f = 30$ MHz, & 300 MHz. **5**

2. (a) What is High Frequency Inductor ? Draw electric equivalent circuit representation for a high frequency wire wound inductor. **5**

   (b) Give two examples of Transmission lines with suitable diagram and field distribution. **5**

3. Derive General transmission line voltage and current equation. **10**

4. (a) Discuss noise models for active and passive components. 5

(b) Define basic voltage and current definition for single and multiple network. 5

5. (a) Explain characteristics of RF amplifier with the help of block diagram. 5

(b) Explain stabilization method for RF BJT amplifier. 5

6. (a) Explain basic oscillator model with the help of Barkhausen Criterion. 5

(b) Explain feedback oscillator design on the basis of T-type feedback. 5

7. Explain Voltage Controlled Oscillator and derive the equation of resonance frequency. 10

8. (a) Discuss low noise amplifier topologies. 5

(b) What is the role of negative resistance in oscillator ? 5

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

(a) Frequency synthesizers

(b) Class AB power amplifier

(c) Resonators

10. Define voltage reflection coefficient, and derive the equation of voltage reflection coefficient for a terminated lossless transmission line. 10