

B.Tech 6th Semester (EEE) F-Scheme Examination,

May-2017

TRANSMISSION LINES AND NETWORKS

Paper-EE-344-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt five questions in all. Question No. 1 is compulsory and attempt one question from each of the four sections.

1. (a) Describe the equation for propagation constant. 5
- (b) Derive circle diagram of a short line. 5
- (c) How will you measure power in transmission lines ? 5
- (d) Design second order low-pass butterworth filter. 5

Section-A

2. An open wire line which is 200 Km long is correctly terminated. The generator at the sending end has $V_g=10V$, $f=1KHz$ and internal impedance of 500 ohms. At the frequency Z_0 of the line is $(683-j 138)$ and $P=0.0074 + j0.0356$ per Km. Determine the sending end voltage, current and power and receiving end voltage, current and power. 20

3. Derive the fundamental transmission equation and from them find expression for voltage and current along an infinite line. 20

Section-B

4. Calculate the capacitance of 20 m long single phase transmission line. It has 2 parallel wires each of 10 mm diameter and spaced 2 m apart. Also calculate the effect of earth, when the line is placed at a height of 8 m from the ground. 20
5. Explain the losses and efficiency of low frequency lines. How these lines are classified according to their length for purpose of analysis ? How will you calculate the inductance of a single phase two-wire line ? 20

Section-C

6. Explain in detail all four special impedance measuring methods in coaxial lines. 20
7. How will you measure VSWR in an open wire transmission line and coaxial cable ? What precautions are required to be taken in such measurements ? 20

Section-D

8. What is an equalizer ? How does it differ from a filter or an attenuator ? Describe some of its applications. Explain working of any one type of equalizer. 20
9. Design and derive equation for symmetrical T-Attenuator and symmetrical Lattice-Attenuator. 20