**4th Sem / Eltx. Engg. Power Eltx Engg.**
**Subject : Network Filters & Transmission Lines**

Time : 3 Hrs.                                    M.M. : 100

### SECTION-A

**Note :** Multiple choice questions. All questions are compulsory.          (10x1=10)

Q.1   For a symmetrical network:
a)   $h_{11} h_{22} - h_{12} h_{21} = 1$     b)   $h_{11} h_{22} - h_{12} h_{21} = 0$
c)   $h_{12} = h_{21}$                  d)   $h_{11} = h_{22}$

Q.2   A two port is reciprocal if and only if:
a)   $Z_{11} = Z_{22}$               b)   $Y_{12} = -Y_{21}$
c)   $H_{12} = H_{21}$               d)   $AD - BC = -1$

Q.3   Neper is equal to _____
a)   115.1 x attenuation is dB
b)   11.51 x attenuation is dB
c)   1.151 x attenuation in dB
d)   0.1151 x attenuation in dB

Q.4   An attenuator have applications in _____
a)   AC & DC circuits
b)   AC circuit only
c)   DC circuit only
d)   Low frequency applications only

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Q.29   Differentiate between band pass filter and band elimination filter?

Q.30   Define Z and Y parameters of a two part networks?

Q.31   How impedance matching is done using STUBS? Briefly describe the methods used.

Q.32   Deduce a relationship between VSWR and reflection coefficient K.

Q.33   What are the advantages of m-derived filter?

Q.34   Explain how a minimum loss attenuator is designed?

Q.35   What do you mean by loading? How is it done?

### SECTION-D

**Note :** Long Answer type question. Attempt any two questions out of three questions.          (2x10=20)

Q.36   How a transmission line is represented by a T-type circuit? Derive the expression for its characteristic's impedance.

Q.37   Draw and explain the working of butter worth's first order low Pass Filter and derive equations for it.

Q.38   Write a short note on any two of the following:
a)   Applications of transmission lines
b)   Bridge T attenuator
C)   Constant K high pass filter

Q.5 An m-derived filter with m=1 is same as _____
a) equalizer        b) attenator
c) butterworth filter     d) prototype filter

Q.6 For a prototype LPF, the phase constant b in the attenuation band is given by _____
A) p                    b) 0
C) ¥                    d) p/2

Q.7 7A filter having two stop bands and separated by a small pass band is called_____
a) LPF            b) BPF
c) BSF           d) HPF

Q.8 If K = O, then VSWR will be_____
a) 0                b) 1
c) 2                d) ¥

Q.9 Phase constant b in HF line is _____
A) $\ddot{O}L/C$          b) $w/\ddot{O}LC$
C) $w\ddot{O}LC$          d) $\ddot{O}/LC$

Q.10 Transmission line will be distortion less is _____
a) LC = GR      b) LG = 1/CR
c) LG = CR      d) LR = GC

## SECTION-B

**Note :** Objective type questions. All questions are compulsory.               (10x1=10)

Q.11 Draw a Unilateral network?

Q.12 What is h-parameters?

Q.13 What do you mean image impedance?

Q.14 What do you mean by active filters?

Q.15 What is asymmetrical network?

Q.16 Name any two types of distortion in transmission lines.

Q.17 Draw the diagram of prototype of low pass T filter.

Q.18 What is the formula for cut-off frequency of BSF?

Q.19 What is the full form of VSWR?

Q.20 Define the term dielectric loss.

## SECTION-C

**Note :** Short answer type questions. Attempt any twelve questions out of fifteen questions.      (12x5=60)

Q.21 What are active and passive filters?

Q.22 How you can distinguish between symetrical and asymmetrical networks?

Q.23 What do you mean by transmission lines? Whatare its various types?

Q.24 Derive an expression for open circuit impedance of half section.

Q.25 Explain different electrical parameters of a symmetrical networks.

Q.26 What is an attenuator? Name its various types.

Q.27 Write a short note on attenuation constant of a transmission line.

Q.28 Explain the design of symmetrical p network.