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4th Sem / Branch : Eltx. Engg.
Subject:- Network Filters & Transmission Lines

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Which of the following is not a non-linear element?
a) Diode b) Transistor
c) FET d) Inductor

Q.2 A network having a battery source in one of its arms is called.....
a) Passive network b) Recurrent network
c) Active network d) Unilateral network

Q.3 Propagation constant parameter is used in.....
a) Inverse network
b) Bilateral network
c) Asymmetrical network
d) Symmetrical network

Q.4 A variable attenuator which needs to vary only two element is.....
a) T type attenuator
b) π type attenuator
c) Bridge T type attenuator

d) Lattice attenuator

Q.5 Neper is equal to.....
a) 115.1 x attenuation in dB
b) 11.51 x attenuation in dB
c) 1.151 x attenuation in dB
d) 0.1151 x attenuation in dB

Q.6 In order to balance π type attenuator, the arm which is splitted in two halves is.....
a) shunt arm
b) series arm
c) bridge arm
d) both series and shunt arm

Q.7 The pass band of LPF is
a) above f_c
b) below f_c
c) from dc to f_{c1} and above f_{c2}
d) from f_{c1} to f_{c2}

Q.8 A filter having cut-off frequency, fc=1/4πÖLC is .....
a) Prototype BPF b) Prototype LPF
c) Prototype BSF d) Prototype HPF

Q.9 In a lossless line; characteristics impedance is given by.....
a) Z_0 b) Zoc
c) Z_{sc} d) Zoc . Zsc

Q.10 Loading is a process in transmission line to.....

a) Decrease inductance of line
b) Artificially boost inductance of line
c) Increasing resistance of line
d) Increasing shunt capacitance of line

SECTION-B

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

Q.11 What is a port?
Q.12 What is an active network
Q.13 What do you mean by insertion loss?
Q.14 Draw an unbalanced π-type attenuator?
Q.15 Whether a lattice attenuator is a balanced network?
Q.16 What is the value of attenuation in any symmetrical attenuator?
Q.17 Draw the diagram of prototype of low pass T filter.
Q.18 What is the formula for cut-off frequency of HPF?
Q.19 What is the unit of attenuation constant (a)
Q.20 Define the term reflection coefficient.

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 can you distinguish between symmetrical and asymmetrical networks?
Q.23 What do you mean by transmission lies? What are its various types?

Q.24 Design a prototype section of band pass filter.
Q.25 Explain the significance of characteristics impedance.
Q.26 What is an attenuator? Name its various types.
Q.27 Write a short note on propagation constant of a transmission line.
Q.28 Deduce the relationship between decibel and Neper.
Q.29 What is an image impedance?
Q.30 Define Z and Y parameters of a two port networks?
Q.31 What is a STUB? What is the purpose of stub in a transmission lines?
Q.32 Derive an expression for relationship between VSWR and reflection coefficient K.
Q.33 Write a short note on m-derived filter.
Q.34 Explain lattice type of network.
Q.35 What do you mean by loading ? How is it done?

SECTION-D

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

Q.36 Establish a relationship between the characteristics impedance of symmetrical π and T networks.
Q.37 Draw the Butterworth's first order low pass filter and derive equations for it.
Q.38 Write a short note on any two of the following:

a) Ladder attenuators
b) Half section
c) Phase delay constant