



SRI VIDYA COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
EC6503-TRANSMISSION LINES AND WAVE GUIDES



2 MARKS & 16 MARKS

UNIT IV PASSIVE FILTERS

1. Define Neper?

The neper is a natural logarithmic unit for the ratio of two currents or two voltages.

2. What are the merits of m-derived filter?

1. The m-derived filter is used to overcome the lack of a sharp cutoff in the simple prototype filter.
2. The m-derived filter provide the constant characteristic impedance in the pass band.

3. What are the characteristics of an ideal filter?

1. Filters are constructed from purely reactive elements.
2. Attenuation in the pass band remains zero.
3. Attenuation is infinite in the attenuation band.

4. Why m-derived filter of L sections are used as terminations of composite filter?

The m-derived filter of L sections are used as terminations of composite filters to provide impedance matching between source and load. These matching L sections provide constant impedances looking towards source or load.

5. what are called constant k-filters?

A filter network section holds the relation $z_1 z_2 = (k)(k)$. are called k filters where z_1, z_2 are reactances of a network and k is a constant independent of frequency.

6. what are the demerits of constant filters?

1. The attenuation does not rise very rapidly at cutoff
2. The characteristic impedance varies widely over the passband.

7. Define filters?

Certain reactive networks will freely pass desired bands of frequencies while almost totally suppressing other bands of frequencies. Such networks are called filters.

8. Define pass band ?

A filter network transmits or passes a desired frequency band without loss, whereas it should stop or completely attenuate all undesired frequencies. The band of frequencies passed by filter is called a pass band of the filter.

9. Define stop band?

A filter network stops a band of frequencies is called stop band. Where the attenuation has a positive value. This stop band has been also called as attenuation band.

10. Define cutoff frequency?

The frequency which separates a pass band from an attenuation band or vice versa is called cutoff frequency. A filter can have one or more cutoff frequencies.

11. Define nominal or design impedance of prototype filter?

In a prototype filter $Z_1, Z_2 = r, r$ where r is real and constant. Resistance of constant value and independent of frequency r is known as the design impedance of the prototype filter.

12. Define frequency of infinite attenuation?

An m -derived filter will become resonant and act as negligible impedance of a particular frequency. The entire signal energy is shunted to ground at this frequency and signal output is zero. This frequency is called as frequency of infinite attenuation.

13. What is composite filter?

The filter circuit which consists of one or more prototype and m -derived sections and also half section is called as composite filter. This composite filter provides impedance matching.

14. Define band pass filter?

A circuit that allows a band of frequencies to pass to the output while attenuating all frequencies below and above this frequency is called a band pass filter.

15. Define band elimination filter ?

A filter circuit that attenuates a specified band of frequencies and permits all frequencies below and above this band is called as a band stop or band elimination filter.

16. What are the applications of crystal filter?

1. Crystal filters find wide applications in carrier telephony and communication receiver circuits.
2. They are also used in single sideband receiver circuits.

17. What is wavelength of a line?

The distance the wave travels along the line while the phase angle is changing through 2π radians is called a wavelength.

18. Write the applications of transmission lines?

It is used for the purpose of distributing cable television signals and computer networks.

19. Define transmission lines?

Transmission line is a cable, data is transmitted from transmitter side to the receiver side via cables.

20. Define characteristic impedance?

The ratio of voltage applied to the current is called input impedance. input impedance of the infinite line is called characteristic impedance

16 MARKS:

1. Derive the m-derived T network from prototype T network?
2. Determine the characteristic impedance of symmetrical T-network?.
3. Derive the design equation of constant k bandpass filter?.
4. Explain the characteristics of symmetrical networks?.
5. Draw and explain the operation of crystal filters?
6. Derive the design equation of constant k Low pass filter?..
7. Derive the design equation of constant k High pass filter?..
8. Derive the design equation of constant k Band elimination pass filter?
9. Explain briefly about Filter fundamentals?