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Reg. No. : | | | | | | | | | | |

Question Paper Code: 55402

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Electronics and Communication Engineering

15UEC502 - TRANSMISSION LINES AND WAVEGUIDES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Band elimination filter is also called as ----------. CO1- R

   (a) Band stop filter (b) notch filter

   (c) both a and b (d) None of these.

2. A line of finite length, terminated in a load equivalent to its characteristic impedance, appears to sending end generator as CO2-R

   (a) Infinite line (b) Finite line

   (c) Finite line with fixed value (d) None of the above

3. Standing waves occurs if characteristic impedance ___ load impedance CO3-R

   (a) Equal to (b) less than (c) Not equal to (d) a and c.

4. There is no electric field can exist in the direction of the magnetic field such a wave is said to be CO4-R

   (a) TE wave (b) TM wave (c) TEM wave (d) Quasi TM wave

5. Which is the dominant mode in circular resonator ---------- CO5-R

   (a) TM_{010} (b) TM_{10} (c) either a or b (d) None of the above

PART – B (5 x 3= 15 Marks)

6. Mention the advantages of m-derived filter than constant K filter. CO1- U

7. A 50Ω line is terminated in load Z_R = 90+ J60 Ω .Determine the reflection coefficient. CO2- App

8. Explain nodes and antinodes in Standing Wave Ratio. CO3- U

9. What is the use of attenuators? CO4- U

10. What is cavity resonantors?. CO5- App

PART – C (5 x 16= 80Marks)

11. (a) Design a m derived high pass filter of T – Section CO1- App (16)

Or

(b) Explain the properties of symmetrical network with relevant equations CO1- U (16)

12. (a) Derive the general solution of transmission line with any load impedance CO2- U (16)

Or

(b) Describe input impedance of open and short circuited lines, and plot the variation of input impedance of dissipation line as a function of length for open and short line. CO2- U (16)

13. (a) Explain the parameters of open wire and coaxial line at Radio frequency. CO3- U (16)

Or

(b) A 50 ohms transmission line is connected to a cellular phone antenna with load impedance ZL=25-j50 ohm. Find the location and length of the short circuited stub required to match with 50 ohms. CO3- U (16)

14. (a) (i) Obtain the expression for the EM field components of TM waves between parallel planes propagating in Z direction . CO4- U (12)

(ii) Discuss the characteristics of TE and TM Waves CO4- U (4)

Or

(b) Explain the characteristic impedance of different Modes in Parallel planes CO4- U (16)

15. (a) Determine the expression of field components of TEM wave along the coaxial cable CO5- App (16)

Or

(b) (i) Describe cavity resonator. CO5- U (8)

ii) Deduce the expression for resonant frequency of the rectangular cavity resonator for any given mode. CO5- U (8)