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

Question Paper Code: 35404

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Third Semester

Electronics and CommunicationEngineering

01UEC504- TRANSMISSION LINES AND WAVEGUIIDES

(Regulation 2013)

Duration: Threehours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Draw the frequency response characteristics of constant K low pass filter.
2. Define decibel. Calculate the *P (mW)* for a gain of -30*dbm*.
3. State distortion less line and mention the condition for a distortionless line.
4. Define deflection coefficient.
5. What is need for smith chart?
6. Define SWR.
7. Define characteristic impedance.
8. Distinguish between TE and TM waves.
9. Find Q factor of a cubic cavity resonator whose surface resistance is $1x10^{-2}$ ohms.
10. Define resonant cavities..

PART - B (5 x 16 = 80 Marks)

11. (a) Derive the characteristic impedance and propagation constant of a symmetrical T-Network. (16)

Or

(b) Design m-derived LPF, having a f_c =5000*Hz* and a design impedance of 600 Ω. The frequency of infinite attenuation is 1.25 f_c.. (16)

12. (a) A transmission line is 2 *miles* long operates at 10*KHz* and has parameters *R*=30 Ω */mile*, *C*=80*nF*/*mile*, *L*=2.2*mH/mile*, and *G*=20*nV/mile*. Find the characteristics impedance, propagation constant, attenuation and phase shift per mile. (16)

Or

(b) Derive the general transmission line equation for voltage and current at any point on a line. (16)

13. (a) (i) Discuss the various parameters of open wire and coaxial line at radio frequency.(8)

(ii) Explain about smith chart and its application. (8)

Or

(b) (i) Obtain the input impedance of a Quarter wave line and Half wave line and write about its application. (8)

(ii) Illustrate the input impedance of open and short circuited dissipation-less transmission line. (8)

14. (a) (i) Derive the field expression of TM waves guided by a parallel conducting plane.(8)

(ii) Discriminate the characteristics of TEM waves. (8)

Or

(b) Derive the expression for *E* and *H* fields, if electromagnetic wave propagates in Z-direction between two parallel plates. (16)

15. (a) Derive the field expression of TM wave propagation in rectangular waveguide stating the necessary assumption. (16)

Or

(b) Discuss in detail about attenuation of TE mode in cylindrical waveguide. (16)

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