

(DEC 223)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Second Year)

ELECTRONICS & COMMUNICATIONS

Paper - III : Transmission Lines & Waves

Time : 3 Hours

Maximum Marks : 75

Answer question No.1 compulsory

(15m)

Answer ONE question from each unit

(4 × 15 = 60m)

- 1) a) State one difference b/w attenuation constant & phase constant.
- b) Define Group velocity.
- c) Define standing wave ratio.
- d) Applications of single stub.
- e) Mathematical expression for velocity of propagation.
- f) What is double stub matching?
- g) Give the characteristics of TE Wave.
- h) Write the expressions for Attenuation factor & Q-factor?
- i) What is symmetrical strip transmission?
- j) Which is dominant mode in circular wave guide?

UNIT - I

- 2) a) Define and derive the expression's for attenuation & phase constant.
- b) A telephone wire 10 km long has the following constants per loop km resistance 50Ω , capacitance $0.01 \mu F$, inductance $0.001 H$ and leakage $= 1.5 \times 10^{-6}$ mhos. The line is terminated in its characteristics impedance and potential difference of 2V having a frequency of 2000 Hz is applied at Sending end. Calculate velocity of propagation and wave length.

OR

3) Write short notes on

- a) Velocity of propagation.
- b) Group velocity
- c) Waveform distortion
- d) Reflection coefficient.

UNIT - II

- 4) a) Differentiate b/w single stub and double stub Impedance matching.
- b) List out the various parameters of co-axial lines at high frequencies.

OR

- 5) A transmission line of length & characteristic impedance 0.4λ , 100Ω respectively and is terminated with a load impedance of $100 + j 90 \Omega$. Find the (i) Voltage reflection coefficient (ii) VSWR (iii) Input Impedance of the line. Compare the results with Smith Chart.

UNIT - III

- 6) a) Compare the transverse electric waves versus Transverse magnetic waves.
- b) Explain about the dominant & other important modes.

OR

- 7) Explain the concept of impossibility of TEM and also Derive an expression for it?

UNIT - IV

- 8) Give the solutions to the field equations in cylindrical co-ordinates.

OR

- 9) a) Explain briefly about parallel plate transmission.
- b) Differentiate Symmetrical Strip transmission & Assymmetric Strip transmission.

