PVP 14

Code: EC5T2

III B.Tech - I Semester – Regular/Supplementary Examinations
October 2019

TRANSMISSION LINES AND WAVE GUIDES
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11x 2 = 22 M

1. a) Relate group velocity and phase velocity.

   b) Define characteristic impedance.

   c) What is meant by reflection coefficient?

   d) State the properties of infinite transmission line.

   e) What is the need of quarter wave transformer?

   f) List the applications of smith chart.

   g) Define phase velocity.

   h) What is meant by dominant mode?

   i) Write the applications of cavity resonator.

   j) Mention the types of coupling.

   k) Write the applications of microstrip lines.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.
3 x 16 = 48 M

2. a) A distortion less transmission line has the following parameters: Z_o= 60Ω, α= 20 mNp/m, V = 0.7c. Find R, L, G, C and wavelength at 0.1GHz. 8 M

   b) Define and explain both loss less and distortion less transmission lines in terms of transmission line parameters. 8 M

3. a) Define Reflection coefficient and VSWR. Explain the relation between the two quantities in terms of their definition. 8 M

   b) A lossless transmission line of length 0.434λ and Z_0= 100Ω is terminated in an impedance 260+j180Ω. Find i) VSWR ii) Reflection Coefficient iii) Input Impedance. 8 M

4. a) What are the advantages and disadvantages of stub matching? 8 M

   b) Explain the characteristics of UHF lines. 8 M

5. a) Discuss the propagation of TE waves in rectangular waveguide. 8 M

b) A rectangular air filled copper waveguide with dimension of 2.286 cm X 1.016 cm cross section and 30 cm length is operated at 9.5 GHz with dominant mode. Find cut off frequency, guide wave length, phase velocity and characteristic impedance. 8 M

6. a) Explain in detail of TE and TM waves in circular wave guides. 8 M

b) Discuss the principle of operation and applications of resonant cavities. 8 M