PVP 14

Code: EC5T2

III B.Tech - I Semester–Regular Examinations December 2016

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) What are the primary and secondary constants of a transmission line?
b) Define loading and what are the types of loading?
c) Write the condition for distortion less transmission line.
d) Define standing wave ratio.
e) What is line impedance?
f) What are the applications of smith chart?
g) What is meant by impedance mismatch?
h) Define dominant mode and sketch the pattern of TE_{10} mode in rectangular waveguide.
i) Distinguish between TE and TM modes in rectangular wave guide.
j) What are the advantages of Microstrip lines over strip line?
k) What is a Quasi TEM mode?

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Explain the conditions which are used for minimum attenuation in transmission lines. 8 M

b) Define characteristic impedance and propagation constants of transmission lines. Calculate the characteristic impedance, the attenuation constant and phase constant of a transmission line if the following measurements have been made on the line Z_{oc}=550Ω and Z_{sc}=660Ω. 8 M

3. a) Define the reflection coefficient and derive the expression for input impedance in terms of reflection coefficient. 8 M

b) A low transmission line of 100Ω characteristic impedance is connected to a load of 400 ohm. Calculate the reflection coefficient and standing wave ratio. 8 M

4. a) Explain the characteristic of UHF lines in a circuit element. 8 M

b) Explain the principle of Impedance matching with quarter wave transformer. 8 M

5. a) Derive an expression for phase velocity and group velocity. 8 M

b) Explain about power transmission (with relevant expressions) in a rectangular wave guide. 8 M

6. a) Discuss the merits and demerits of circular wave guide over rectangular wave guide. 8 M

b) What is a Micro strip line? Explain the construction details of a Micro strip line. 8 M