

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Fifth Semester**Electronics and Communication Engineering***EC3551 – Transmission Lines and RF Systems****(Smith Chart must be provided)***Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks***PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	State the properties of an infinite line.	L1	1	2
2.	Give the expression for the reflection factor.	L1	1	2
3.	Write the relationship between the standing wave ratio and the magnitude of the reflection coefficient.	L2	2	2
4.	When does reflection occur in a transmission line?	L2	2	2
5.	Point out the difficulties in single stub matching.	L2	3	2
6.	List two applications of the Smith chart in transmission line analysis.	L1	3	2
7.	Mention the characteristics of TE waves.	L1	4	2
8.	Why are rectangular waveguides preferred over circular waveguides?	L2	4	2
9.	Define MMIC.	L1	5	2
10.	Differentiate between low noise amplifiers and power amplifiers.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Describe about the waveform distortion and derive the condition for distortion less line.	L2	1	16
	Or			
	b Describe the expressions for the input impedance and transfer impedance of transmission lines.	L2	1	16
12.	a Apply the concept of a zero dissipation transmission line to explain its practical significance in radio frequency circuits.	L3	2	16
	Or			
	b Derive the measurement of power and impedance on the line of negligible losses.	L3	2	16
13.	a Analyze the use of a single short circuited stub to match a $400\ \Omega$ transmission line to a load of $200 - j100\Omega$. The wavelength is 3 m and determines the position and length of the stub.	L4	3	16
	Or			
	b Using the smith chart, perform double stub matching to match a complex load of $Z_L = 18.75 + j 56.25\ \Omega$ to a line with characteristics impedance of $Z_0 = 75\ \Omega$.	L4	3	16

14.	a	Describe the propagation of electromagnetic waves between parallel planes of perfect conductors.	L2	4	16
		Or			
	b	Illustrate the propagation of TM modes in a circular waveguide.	L2	4	16
15.	a	Explain the operation of a bipolar junction transistor at RF frequencies with necessary diagrams.	L2	5	16
		Or			
	b	Discuss the operation of power dividers and their importance in RF design.	L2	5	16