

5E5023	Roll No. <u>5E68EC 036</u>	[Total No. of Pages : 2]
	5E5023	
<p>B.Tech. V Semester (Main/Back) Examination, Nov./Dec. - 2017 Electronics And Communication Engineering 5EC3A Telecommunication Engg.</p>		

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Discuss the different types of transmission lines and their applications. (8)
- b) A telephone line has $R = 30 \Omega / \text{km}$, $L = 100 \text{ mH/km}$, $G = 0$, and $C = 20 \mu \text{ F/km}$. At $f = 1 \text{ kHz}$, obtain :
 - i) The characteristic impedance of the line (4)
 - ii) The propagation constant (4)

OR

1. a) What are the different types of losses in transmission lines? Explain them. (8)
- b) For a transmission line which is terminated in normalized impedance Z_n , $\text{VSWR} = 2$. Find the normalized impedance magnitude. (8)

Unit - II

2. a) Describe the smith chart and its application in analysis of transmission lines. (8)
- b) A transmission line has a characteristic impedance of $50 + i0.01 \Omega$ and is terminated in a load impedance of $73 - i 42.5 \Omega$. Calculate
 - i) The reflection coefficient (4)
 - ii) The standing wave ratio (4)

OR

2. a) Describe the single and double stub matching. (8)
- b) A lossless transmission line operating at 4.5 GHz has $L = 2.4 \mu \text{ H/m}$ and $Z_0 = 85 \Omega$. Calculate the phase constant β and phase velocity μ . (8)

5E5023/2017

(1)

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Unit - III

3. a) Describe the constant k-filters. (10)
b) What do you mean by symmetrical and a symmetrical two port networks? Explain them. (6)

OR

3. a) Design a m-derived T-section low pass filter having cut-off frequency $f_c = 1000$ Hz, design impedance $R_k = 600 \Omega$ and frequency of infinite attenuation $f_\infty = 1050$ Hz. (8)
b) Describe the π -section and T-section attenuators. (8)

Unit - IV

4. a) What do you understand by cross talk? How it can be reduced? (10)
b) Discuss the following : (6)
i) Traffic unit
ii) Grade of service
iii) Busy hour

OR

4. a) Explain the frequency division and time division multiplexing. (8)
b) Describe echo suppressors. (8)

Unit - V

5. Describe the following :
a) EPABX (8)
b) SPC digital telephone exchange (8)

OR

5. Describe the following :
a) Fascimile services (8)
b) STS & TST switches (8)

