

5E5023

Roll No. _____

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B. Tech. V Sem. (Main/Back) Exam., Nov.-Dec.-2016
Electronics & Communication Engineering
5EC3A Tele Communication Engineering

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks Main: 26
Min. Passing Marks Back: 24

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.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

UNIT - I

Q.1 (a) Describe the types of losses that may occur with high frequency transmission line. [8]

(b) Calculate the characteristics impedance, propagation coefficient and velocity of wave propagation at a frequency of 400 kHz of a uniform transmission line which has the following constant $L = 0.5$ mH/mile, $c = 0.08$ μ f/mile. Resistance and leakage negligible. [8]

OR

- Q.1 (a) Derive and explain input impedance of open and short circuited lines. [8]
- (b) A transmission line has a characteristics impedance of 70Ω . The length of line is 200m. Find input impedance at a frequency of 1 MHz if the line is.
- (i) Short circuited at far end [4]
- (ii) Open circuited [4]

UNIT – II

- Q.2 (a) Draw the double stub matching Network arrangement and write the merits over the single stub matching network arrangement. rtuonline.com [8]
- (b) A lossless transmission line with characteristic impedance 75Ω and of electric length 0.3λ is terminated with load impedance of $(40 + j 20)\Omega$. Determine the reflection coefficient of load, SWR of line and input impedance of the line. [8]

OR

- Q.2 (a) Derive the relationship between standing wave ratio and reflection co-efficient. [6]
- (b) An open wire R.F. transmission line (loss free) has a $Z_0 = 600\Omega$ is connected to resistive load of 100Ω . Find the position and length of short circuited stub, if frequency is 150 MHz. [10]

UNIT – III

- Q.3 (a) Write short notes on: [5×2=10]
- (i) Image and characteristic impedance of four terminal Networks.
 - (ii) Characteristic impedance and propagation constant of lattice network.
- (b) Design m – derived T and π section of low pass filter having a design impedance of 600Ω , a cut off frequency of 2000 Hz and frequency of infinite attenuation $f_{\infty} = 2100\text{Hz}$. [6]

OR

- Q.3 (a) What are constant k filters? What are the major drawbacks and how are they overcome using m – derived and composite filters. [8]
- (b) Calculate the element values for a symmetrical π attenuator to be inserted between 300 ohm impedances to provide 25dB attenuations. [8]

UNIT – IV

- Q.4 (a) Draw the block diagram of a Modern telephone instruments and explain its working. Also explain two wire and four wire transmission. [12]
- (b) Explain the Echo suppressors cancellers and cross talk. [4]

OR

- Q.4 (a) A four wire circuit has an overall loss of 1dB and the balance return loss at each is 6dB find the signing point, stability margin and attenuation of talker and listener echo. [12]

- (b) Compare TDM and FDM, suggest which multiplexing system being used in general and why. [4]

UNIT – V

- Q.5 (a) Explain the working principal of modern fax machine. [8]
- (b) Distinguish between:
- (i) Trunking and grading [4]
- (ii) Pure chance and full traffic [4]

OR

- Q.5 (a) Explain EPABX and SPC digital telephone exchange. [8]
- (b) The drum diameter of a facsimile machine is 70.4mm and the scanning pitch is 0.2mm per scan. The drum rotates at 120mm. The signal frequency modulates a sub – carrier and only the first pair of side band need be taken into account. Calculate the band width of the SCFM system [8]
