5E5023

Roll No

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5E5023

B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015
Electronics & Communication Engineering
5EC3A Telecommunication 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.

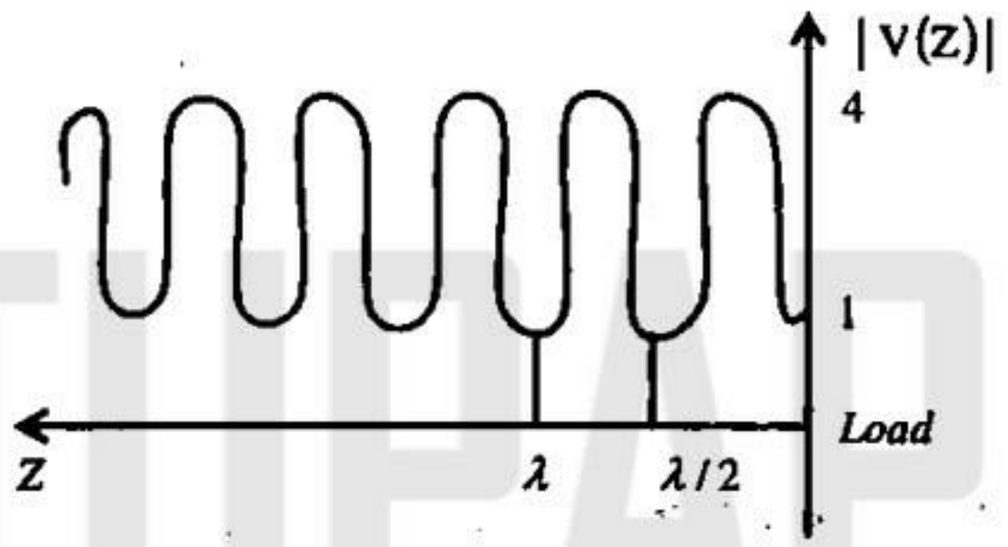
1. NIL

2. NIL

UNIT-I

Q.1 (a) Voltage standing wave pattern in a lossless transmission line with characteristics importance impedance 50Ω and a resistive load is shown in figure.

Calculate the value of load resistance and reflection coefficient. [8]



(b) What is the meaning of standing wave patterns? Explain it for lossless transmission line and for transmission line with attenuation. [8]

OR

Q.1 (a) Explain the characteristics of transmission line at Radio frequencies and calculate the characteristic impedance. [8]

(b) A 20 km long transmission line operating at 500MHz has following primary constants R=0.5Ω/m, L=250nH/m, C=100Pf/m, G=10^{-6}S/m. All constants are assumed to be independent of frequency.

Calculate characteristic impedance, attenuation coefficient (α) and phase coefficient (β) for the line. [8]

UNIT-II

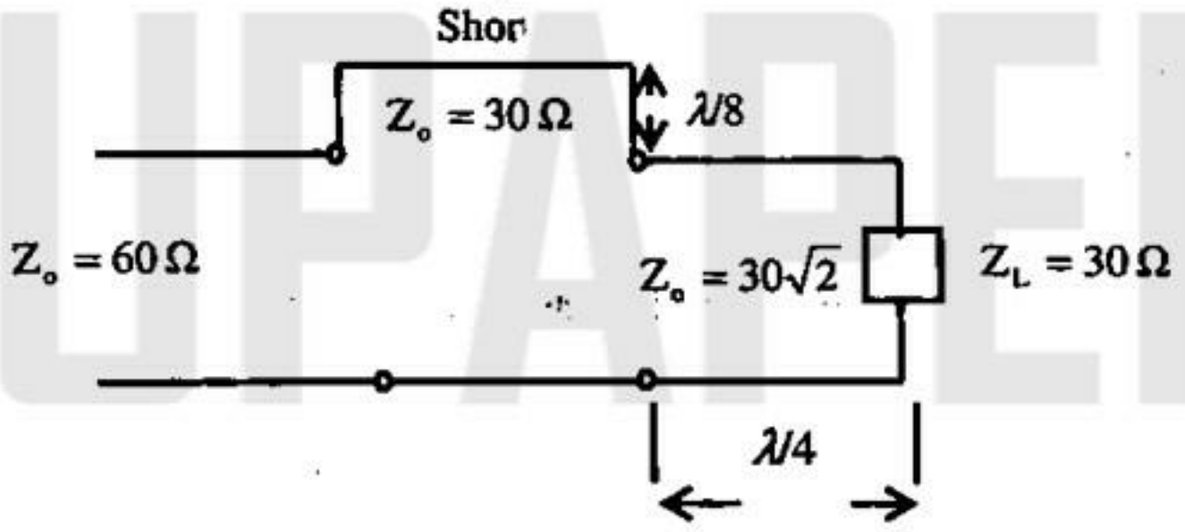
Q.2 (a) What do you mean by matching of transmission line? Explain the method of single and double stub matching with neat diagram. [9]

(b) An open wire R.F. transmission line (loss free) has a $Z_o = 600\Omega$, is connected to resistive load of 100Ω. Find the position and length of short circuited stub, if frequency is 150 MHz. [7]

OR

Q.2 (a) Draw a block diagram of a setup for measurement of attenuation and insertion loss of transmission line and explain firefly. [10]

(b) In the circuit shows all the transmission line section are lossless. Calculate the VSWR for the 60Ω line [6]



UNIT-III

Q.3 (a) Draw a 'T' and 'π' section of a prototype high pass filter and explain the parameters 'α' and 'β'. [10]

(b) Design a 'T' and 'π' section constant 'K' high pass filter having cut off frequency of 10KHz with impedance $R_o = 500\Omega$. Find the - [6]

(i) Characteristics impedance and phase constant at 20KHz

(ii) Attenuation at 5KHz

OR

Q.3 (a) Explain a symmetrical lattice attenuator. Write its design equations in terms of characteristics impedance and attenuation factor. [8]

(b) Calculate the elements value of a π-type attenuator to be inserted between 500Ω impedance for an attenuation of 50dB. [8]

UNIT-IV

Q.4 (a) What are the main sources of "NEXT" and "FEXT" in telephone systems? How they are controlled? Explain in detail. [8]

(b) Explain the working of two wire and four wire repeaters and compare both of them. [8]

OR

Q.4 (a) Determine -

(i) Lost traffic and

(ii) Grade of service provided by five switches arranged in full availability group when traffic offered in 0.9 traffic units. [8]

(b) With the help of neat diagram explain the working of echo cancellers. [8]

UNIT-V

Q.5 Write short notes on **any two** - [8×2=16]

(a) STS and TST switching

(b) EPABX and SPC Digital telephone exchange.

(c) Signaling in telephone systems.
