

5E5024

Roll No. _____

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5E5024

B. Tech. V Sem. (Main / Back) Exam., Dec. 2014
Electronics and Communication Engineering
5EC4A Analog Communication

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 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. rtuonline.com

Use of following supporting material is permitted during examination.

(Mentioned in form No. 205)

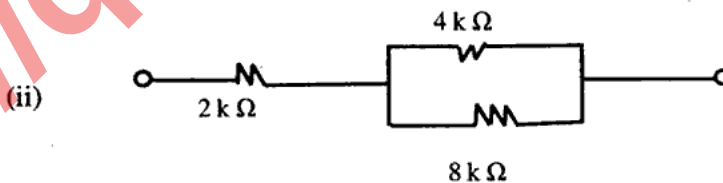
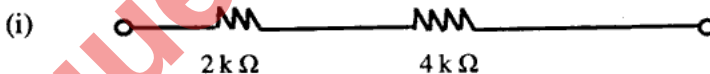
1. NIL

2. NIL

UNIT - I

Q. 1 (a) Calculate the total noise power in following circuits.

[4+4=8]



(b) Define equivalent noise temperature and find its expression in cascaded circuits.[8]

OR

(a) Define following & find -

[4×4=16]

- (i) Noise bandwidth
- (ii) Noise figure
- (iii) Noise in reactive elements
- (iv) Noise in active elements

UNIT – II

Q. 2 (a) If a baseband signal $x(f) = 2 \sin 100t + 1.5 \cos 300t$ is amplitude modulated with carrier signal $y(f) = 10 \sin 3 \times 10^6 t$

[4+4=8]

Then -

- (i) Draw the frequency spectrum of AM signal
- (ii) Find the overall modulation index.

(b) Compare AM with following and find the % power saving -

[8]

- (i) AM –DSB
- (ii) DSB –SC
- (iii) SSB

OR

Draw the following -

[4×4=16]

- (i) AM waveform when message signal is square wave & carrier signal sine wave.

- (ii) Super heterodyne receiver
- (iii) Circuit diagram for demodulate AM signal
- (iv) Generation of AM-DSB signal.

UNIT – III

- Q. 3 (a) Draw the phases diagram of narrow and wide band FM. [8]
- (b) Compare AM, FM & PM in respect of - [8]
- (i) Bandwidth
 - (ii) Noise effects

OR

Draw & explain the working of - [4×4=16]

- (i) PLL Demodulator
- (ii) Indirect FM Generation
- (iii) FM waveform when message signal is square wave & carrier signal is sine wave.
- (iv) Conversion of PM to FM

UNIT – IV

- Q. 4 (a) Why we do pre-emphasis and de-emphasis? How it improves the signal to noise ratio? [8]
- (b) Write the name of any two sources of internal & external noise. Also write the frequency range of these noises. [8]

OR

Define the following & explain -

[4×4=16]

- (i) Threshold effect
- (ii) Synchronous detection
- (iii) Analog & Digital modulation
- (iv) Noise in CW and discrete systems.

UNIT - V

Q. 5 Draw the following & explain -

[8+8=16]

- (i) Natural & flat top sampling & scheme for achieving it
- (ii) Circuit diagram of PWM Generation

OR

- (i) Draw the circuit for PPM Generation and explain its noise performance. [8]
- (ii) Why natural sampling is impossible? Explain any sampling scheme in detail. [8]

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