This exam paper is for:

Extra Paper 0

A00123456

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ELEX 3525 : Data Communications
Term 201430

MID-TERM EXAMINATION
9:30 – 10:20 AM
October 29, 2014

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(a) The amplifier for an audio intercom amplifies frequencies between DC and 20 kHz. Does the amplifier represent a low-pass, band-pass or high-pass channel?

(b) A 7 mV input to an amplifier results in an output of 0 dBm. All impedances are 50 Ω. What is the gain of the amplifier in dB?

(c) The input to a channel consists of a 1 kHz sine wave. The output contains power at 1 and 3 kHz. Is this a linear channel? *Briefly* explain why or why not.

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This exam paper is for:

Anthony Marryatt

A00825420

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This exam paper is for:

Ching Tung Chang

A00885579

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Eun Suk Shin

A00749281

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This exam paper is for:

Gurjeet Saini

A00800183

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This exam paper is for:

Jian Zong Li

A00780597

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This exam paper is for:

Jonathan Warkentin

A00271624

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This exam paper is for:

Lee Watts

A00787410

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This exam paper is for:

Marc Eldwin Mandal

A00855945

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This exam paper is for:

Maurice Paolo Torio

A00861502

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This exam paper is for:

Mohammad Sajed Foroughi Jahromi

A00858972

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This exam paper is for:

Philip Jurkiewicz

A00809614

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(b) What is the maximum rate at which symbols could be sent over this channel without inter-symbol interference?

This exam paper is for:

Puneet Bhathal

A00742758

Each exam is equally difficult.
Answer your own exam.

Do not start until you are told to do so.

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ELEX 3525 : Data Communications
Term 201430

MID-TERM EXAMINATION
9:30 – 10:20 AM
October 29, 2014

This exam has four (4) questions on one (1) page. The marks for each question are as indicated. There are a total of 15 marks. Answer all questions. Write your answers in the exam book provided. Show your work. Numerical answers must include units. You may answer the questions in any order. Books and notes are allowed. No electronic devices other than calculators are allowed. You may keep this exam paper.

Show your work.

Question 1 (2 marks)

A communication system transmits data continuously, one byte immediately after another, using the RS-232 serial interface standard. The interface uses 8 data bits and no parity bit. Assuming a bit rate of 9600 bps and no errors, what is the throughput in bits/s?

Question 2 (5 marks)

(a) The amplifier for an audio intercom amplifies frequencies between DC and 20 kHz. Does the amplifier represent a low-pass, band-pass or high-pass channel?

(b) A 7 μV input to an amplifier results in an output of 0 dBm. All impedances are 50 Ω. What is the gain of the amplifier in dB?

(c) The input to a channel consists of a 1 kHz sine wave. The output contains power at 1 and 3 kHz. Is this a linear channel? *Briefly* explain why or why not.

(d) You measure the voltages on two of the pins of a disconnected RS-232 interface. The CTS pin reads 0 V and DTR reads 5 V . Is this a DTE or DCE interface?

Question 3 (3 marks)

You want to build 75 Ω air-dielectric co-ax cable using 12-AWG (2mm diameter) wire as the center conductor and copper tubing for the shield. What diameter tubing will you need?

Question 4 (5 marks)

(a) A channel has a brick-wall frequency response from 0 to 3 kHz. The noise power at the output of the channel is 0 dBm. What is the minimum output signal power, in dBm, that would allow error-free transmission at a rate of 12 kbs?

(b) What is the maximum rate at which symbols could be sent over this channel without inter-symbol interference?

This exam paper is for:

Widya Ningsih

A00858111

Each exam is equally difficult.
Answer your own exam.

Do not start until you are told to do so.

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ELEX 3525 : Data Communications
Term 201430

MID-TERM EXAMINATION
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Show your work.

Question 1 (2 marks)

A communication system transmits data continuously, one byte immediately after another, using the RS-232 serial interface standard. The interface uses 7 data bits and one parity bit. Assuming a bit rate of 4800 bps and no errors, what is the throughput in bits/s?

Question 2 (5 marks)

(a) The amplifier for a satellite communication system amplifies frequencies between 12.1 GHz and 12.125 GHz . Does the amplifier represent a low-pass, band-pass or high-pass channel?

(b) A 7 mV input to an amplifier results in an output of 0 dBm. All impedances are 50 Ω. What is the gain of the amplifier in dB?

(c) The input to a channel consists of a 1 kHz sine wave. The output contains power at 1 and 3 kHz. Is this a linear channel? *Briefly* explain why or why not.

(d) You measure the voltages on two of the pins of a disconnected RS-232 interface. The RTS pin reads 0 V and DSR reads 5 V . Is this a DTE or DCE interface?

Question 3 (3 marks)

You want to build 50 Ω air-dielectric co-ax cable using 12-AWG (2mm diameter) wire as the center conductor and copper tubing for the shield. What diameter tubing will you need?

Question 4 (5 marks)

(a) A channel has a brick-wall frequency response from 0 to 4 kHz. The noise power at the output of the channel is 0 dBm. What is the minimum output signal power, in dBm, that would allow error-free transmission at a rate of 16 kbs?

(b) What is the maximum rate at which symbols could be sent over this channel without inter-symbol interference?