Name ….....ID …..... Section ….....Seat No.....

Sirindhorn International Institute of Technology
Thammasat University

Midterm Examination: Semester 1/2009

Course Title : ITS323 Introduction to Data Communications

Instructor : Dr Steven Gordon

Date/Time : Monday 27 July 2009; 13:30 – 16:30

Instructions:

- This examination paper has 18 pages (including this page).
- Condition of Examination
  Closed book (No dictionary; Non-programmable calculator is allowed)
- Students are not allowed to be out of the exam room during examination. Going to the restroom may result in score deduction.
- Turn off all communication devices (mobile phone etc.) and leave them under your seat.
- Write your name, student ID, section, and seat number clearly on the answer sheet.
- The space on the back of each page can be used if necessary.
- Assume bits are ordered from left to right: 1st bit, 2nd bit, 3rd bit, …, nth bit
- Unless otherwise stated in the question, assume the speed of transmission is 3×10^8 m/s
- Free space propagation path loss:

$$\frac{P_t}{P_r} = \frac{(4\pi d)^2}{G_t G_r \lambda^2}$$

- Antenna gain for parabolic antenna with area A:

$$G = \frac{4\pi A}{\lambda^2}$$

Mid Term Exam Hints

The previous page is the front page of the Mid Term Exam.

Part A – Multiple Choice Questions [22 marks]

11 multiple choice questions. 2 marks for correct answer, 0 marks for incorrect answer, 0 marks for no answer. Total: 22 marks

Part B – General Questions [78 marks]

Below I give the main topic/lecture covered in each question.

Q1 [12 marks] – Signal Encoding Techniques

Q2 [11 marks] – Transmission Media

Q3 [9 marks] – Signal Encoding Techniques

Q4 [16 marks] – Digital Data Communication Techniques

Q5 [14 marks] – Data Link Control Protocols

Q6 [7 marks] – Data Transmission, Protocol Architectures

Q7 [9 marks] – Data Transmission, Protocol Architectures

Total Marks: 100

You must give correct units for all relevant answers e.g. Mb/s, KHz, ms, …

As stated at start of the course, assume:

1 Byte = 8 bits
1000 Bytes = 1KB
1000KB = 1MB
1000MB = 1GB
1000ns = 1us
1000us = 1ms
1000ms = 1s

An uppercase 'K' is the same as lowercase 'k', that is: 1000. e.g. 1KHz = 1kHz