

This exam paper is for:

Each exam is equally difficult.

Answer your own exam.

Do not start until you are told to do so.

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MID-TERM EXAMINATION  
11:30 – 12:20 AM  
April 10, 2014

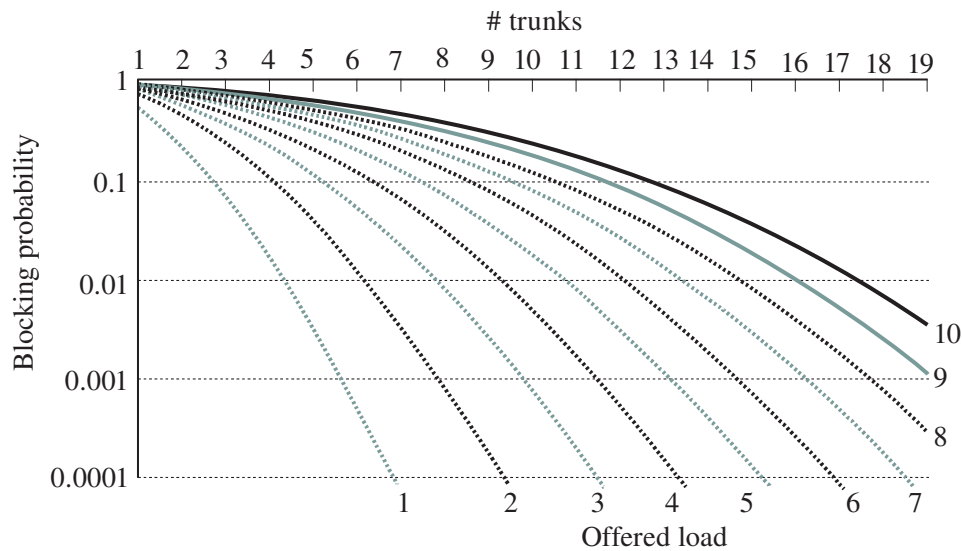
*This exam has three (3) questions on two (2) pages. The marks for each question are as indicated. There are a total of 14 marks. Answer all questions. Write your answers in the exam book provided. Show your work. Numerical answers must include units. You may answer the questions in any order. Books, notes and calculators are allowed. You may keep this exam paper.*

Show your work.

**Question 1 ( 5 marks)**

A PBX has 6 outgoing trunks. During the busiest time of day 24 calls per hour are placed. Calls last an average of 5 minutes. What is the probability that all trunks are busy?

Assume the Erlang-B distribution applies. You may use the graph on page 4 of Lecture 14 or the following (corrected) version of the graph on page 3 of Lecture 14.



**Question 2 ( 5 marks)**

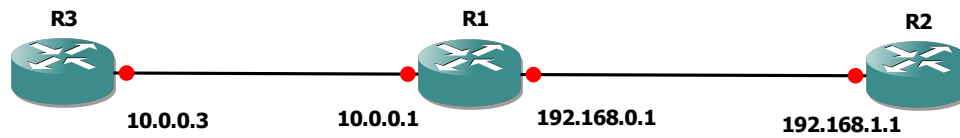
A PPP-encapsulated frame consists of the following bytes (in hexadecimal):

7E FF 03 41 01 02 7D 5D 40 FF FF 7E

- What is the value of the PPP frame header's protocol field (in hexadecimal)?
- What are the values of the payload bytes (the "information" field) after removing all encapsulation and escaping? Give your results in hexadecimal.

**Question 3** (4 marks)

Below is a diagram of a simple IP network consisting of three hosts and two links with the interface IP addresses as shown.



Below is a routing table for host R1. Give the four values that would have to be placed in the second row of the routing table so that packets for the 10.0.0.0/16 network are sent on the interface connecting R1 to R3?

destination	mask	gateway	interface
192.168.1.1	255.255.255.255	*	192.168.0.1
?	?	?	?