

UNIVERSITY OF BUEA
Faculty Engineering and Technology

Department: Computer Engineering

Course Master:

Course Code: CEF 301

Course Instructors: Mengnjo A. and Fomboh M.

Day : Saturday

Course Title: Probability and statistics for Computer Engineers

Duration: 1.5 hours

Date: 1/12/2012

INSTRUCTIONS

Answer all questions. All necessary work must be shown and must be neatly and orderly presented.

1. (8 marks) Microsoft's internet explorer (IE) and Mozilla Firefox (MF) are two popular web browsers. IE supports certain features that are present at a given site, such as security, that MF does not support and vice versa. Assume that all features on all sites are exploitable by either IE or MF. The probability that IE supports a given feature is $1 - \delta$ and the probability that MF fails to support a feature is δ .
 - (a) A user selects a browser at random and attempts to assess it. What is the probability that the user will be forced to change the browser? (4 marks)
 - (b) Given that the browser fails to assess a site, what is the probability that it is IE? (4 marks)
2. (9 marks) (a) Errors in the transmission of a random stream of bytes occur with probability p .
 - c. What is the probability that the first error will occur after 16 bytes? (4 marks)
 - (b) Packets at a certain node on the internet arrive with a rate of 100 packets per minute. What is the probability that
 - (i) no packets arrive in 6 seconds,
 - (ii) two or more packets arrive in the first six seconds? (5 marks)
3. (12 marks) (a) When a computer disk manufacturer tests a disk, it writes to the disk and then test it using a certifier. The certifier counts the number of missing pulses or errors. The number of errors on a test area on a disk has a poisson distribution with a $\lambda = 0.2$.
 - (i) What is the expected number of errors per test area? (1 mark)
 - (ii) What percentage of test areas have two or fewer errors? (4 marks)(b) Define each of the following terms as used in Probability:
 - (i) Sample space, (ii) Event,
 - (iii) Probability function, (iv) Probability space,
 - (v) Random variable, (vi) Discrete Random variable,
 - (vii) Continuous Random Variable, (ix) Probability density function,
 - (viii) Distribution function of a random variable. (8 marks)

Good Luck