KFUPM - COMPUTER ENGINEERING DEPARTMENT
COE-540 –Computer Networks - Quiz 04

Student Name:
Student Number:

1) (**20 points**) Let X be a non-negative integer-valued random variable:

a) (**5 points**) Specify the range (possible values) for X?

b) (**5 points**) if $P(X = k)$ is the probability that X is equal to the value k, write an expression for computing $E[X]$.

c) (**10 points**) Show that $E[X] = \sum_{k=0}^{\infty} P(X > k)$.

2) (**20 points**) The exponential random variable exhibits a property called the memoryless property.

a) (**5 points**) Specify the probability density function (pdf) for the exponential random variable whose mean is $1/\lambda$

b) (**10 points**) State the memoryless property and PROVE the property.

c) (**5 points**) Show that the geometric variable also exhibits the same property?