Indicate “+” for true, “O” for false.

___ 1. The "Cumulative Distribution Function" (CDF) of a random variable $X$ is defined as $F(x) = P\{X \leq x\}$.

___ 2. The rejection method for generating a random number $x$ having a CDF $F(x)$ requires that you derive the inverse function $F^{-1}(\bullet)$, obtain two random numbers $(x,y)$ having uniform distribution in [0,1]. If $y \leq F^{-1}(x)$ then we accept $x$ as the random number, else repeat.

___ 3. The inverse transformation method can always be used to generate a random number with distribution function $F$, provided you can calculate its inverse $F^{-1}(\bullet)$.

___ 4. The inverse transformation method (if it can be used) will always require fewer uniformly-generated random numbers than the rejection method.

___ 5. If the random variable $R$ is uniformly distributed in [0,1], then $-\frac{\ln(1-R)}{\lambda}$ has Poisson distribution with parameter $\lambda$.

___ 6. In a Poisson process, the time between arrivals has a Poisson distribution.

___ 7. The inverse transformation method to generate a random number can be used to simulate interarrival times for a Poisson process.

___ 8. In a Poisson process with arrival rate $\lambda$/minute, the number of arrivals in $t$ minutes is random, with a Poisson distribution having mean $\lambda t$.

___ 9. The exponential distribution is a special case of the Erlang distribution.

___ 10. If $F(t)$ is the CDF of the interarrival time for a Poisson process, the expected number of arrivals $E_i$ which fail in the time interval $[t_i-1, t_i]$ is $F(t_i) - F(t_{i-1})$

___ 11. The inverse transformation method could be used for generating random numbers having an Erlang distribution.

___ 12. If $F$ is the CDF of a random variable $X$, then $F(0) = 1$. 
Consider the probability distribution with density function $f$ shown on the right:

13. The value of $C$ must be (choose nearest value):
   a. 0.1  
   b. 0.2  
   c. 0.3  
   d. 0.4  
   e. 0.5  
   f. 0.6  
   g. 0.7  
   h. 0.8  
   i. 0.9  
   j. 1.0  
   k. 10   
   l. $\geq 20$

14. Suppose that four pairs $(x,y)$ of random numbers were generated, with $x$ uniformly distributed between 0 and 10, and $y$ between 0 and $C$, and that the four pairs were plotted as shown above. Which sequence of random numbers would have the desired distribution?
   a. 1, 2, …  
   b. 1, 7, …  
   c. 2, 7, …  
   d. 2, 8, …

15. This method for generating random numbers is known as
   a. inverse transformation method  
   b. triangular method  
   c. decomposition method  
   d. composition method  
   e. rejection method  
   f. none of the above