REVIEW FINAL EXAM
MGQ201
VERSION ONE

1. Determine the required value of the missing probability to make the distribution a discrete probability distribution:

x	P(x)
3	.28
4	?
5	.34
6	.15

A. 0.23
B. 0.67
C. 0.01
D. 0.32

For questions 2 and 3, consider the discrete probability distribution below.

Outcome	Probability
1	0.34
2	0.17
3	0.22
4	0.27

2. Compute the mean of the distribution (round to two decimal places)
   A. 2.00
   B. 3.42
   C. 2.5
   D. 2.42

3. Compute the standard deviation of the distribution (round to three decimal places)
   A. 1.210
   B. 2.110
   C. 1.496
   D. 2.599

For questions 4 – 7, consider the following information. A bread distributor wants you to recommend how many loaves of multigrain bread to make each morning by 11AM. Each loaf costs the distributor $4.00 and can be sold for $7.00, and leftover loaves are donated to the local shelter. Demands for the loaves of 25, 50, and 75 are 30%, 20%, and 50%, respectively.

4. What is the expected monetary value when baking 25 loaves?
   A. $50
   B. $75
   C. $90
   D. $97.5

5. What is the expected monetary value when baking 50 loaves?
   A. $50
   B. $75
   C. $90
   D. $97.5

6. What is the expected monetary value when baking 75 loaves?
   A. $50
   B. $65
   C. $85
   D. $97.5

7. How many loaves would you recommend that the baker makes each morning?
   A. 0 batches
   B. 25 batches
   C. 50 batches
   D. 75 batches

For questions 8 – 10, consider the following information. There is a binomial distribution where $p = 0.6$ and $n = 6$.

8. What is the probability that x equals 2?
   A. $P(x=2) = 0.1382$
   B. $P(x=2) = 0.8618$
   C. $P(x=2) = 0.0041$
   D. $P(x=3) = 0.9959$

9. What is the probability that x is less than or equal to 1? Round to 4 decimal places.
   A. $P(x \leq 1) = 0.0300$
   B. $P(x \leq 1) = \mathbf{0.0410}$
   C. $P(x \geq 1) = 0.9590$
   D. $P(x \geq 1) = 0.2456$

10. What is the probability that x is greater than 4? Round to 4 decimal places.
    A. $P(x > 4) = \mathbf{0.2333}$
    B. $P(x > 4) = 0.5443$
    C. $P(x \geq 4) = 0.2765$
    D. $P(x \geq 4) = 0.7667$

For questions 11 – 13, consider the following information. There is an exponential probability distribution that has a mean equal to 8 minutes per customer.

11. What is the probability that x is greater than 16?
    A. $P(x < 16) = .0032$
    B. $P(x > 16) = 0.8647$
    C. $P(x > 16) = 0.1353$
    D. $P(x \geq 16) = 0.1353$

12. What is the probability that x is greater than 5?
    A. $P(x < 5) = 0.5353$
    B. $P(x > 5) = 0.5353$
    C. $P(x > 5) = 0.1353$
    D. $P(x \geq 5) = 0.1353$

13. What is the probability that x is between 8 and 20 (inclusive)?
    A. $P(8 \leq x \leq 20) = 0.1353$
    B. $P(8 \leq x \leq 20) = 0.2858$
    C. $P(8 \leq x \leq 20) = 0.3445$
    D. $P(8 \geq x \geq 20) = 0.2858$

14. An urn contains eight green balls and nine yellow balls. If three balls are selected without being replaced, what is the probability that of the balls selected, two of them will be green and one of them will be yellow? Round to 4 decimal places.
    A. $P(x = 2 \text{ green}) = 0.6294$
    B. $P(x = 2 \text{ green}) = 0.3706$
    C. $P(x = 1 \text{ yellow}) = 0.6221$
    D. $P(x = 1 \text{ yellow}) = 0.3779$

For questions 15 – 17, consider a Poisson distribution and find the probability of exactly 6 occurrences under the following conditions:

15. When $\lambda = 3.0$, find $P(x = 6)$
    A. 0.0504
    B. 0.9496
    C. 0.0000
    D. 0.4496

16. When $\lambda = 4.0$, find $P(x = 6)$
    A. 0.8958
    B. 0.0000
    C. 0.1042
    D. 0.0595

17. When $\lambda = 5.0$, find $P(x = 6)$
    A. 0.1462
    B. 0.1755
    C. 0.0000
    D. 0.1044

For questions 18 – 20, consider a binomial probability distribution with $p = 0.2$ in order to calculate the following probabilities:

18. The probability of exactly four successes when n = 5
    A. $P(4) = 0.0000$
    B. $P(5) = 0.9936$
    C. $P(4) = 0.0029$
    D. $P(4) = 0.0064$