STATISTICS 2023 **NAME, IN INK**_____

EXAM TWO **SIGNATURE, IN INK**_____

SPRING 2007 **CWID, IN INK**_____

Retain this exam for grade verification once it is graded and returned to you.

TRUE OR FALSE. Answer with a capital T or F. (4 points each)

_____ 1. The number of people in attendance and the amount of time a meeting takes are both discrete random variables.

_____ 2. A continuous random variable is a variable that only has probability on intervals of values and no probability at all on any single value.

_____ 3. Probability mass functions use area under curves to represent how much probability occurs at each value of a discrete random variable.

_____ 4. The mean or expected value of a discrete random variable is always equal to the variance of the discrete random variable.

_____ 5. If a variable has a normal distribution then the mean of the variable is always zero and the standard deviation is always one.

_____ 6. The Binomial distribution is always right skewed when the p value is above .7.

STANDARD NORMAL DISTRIBUTION QUESTIONS. State the answer on the line provided. (4 points each)

_____ 7. Find z_o if $P(Z < z_o) = 0.0885$.

_____ 8. Find the $P(0.67 < Z < 2.56)$.

_____ 9. What is the $P(Z > - 1.48)$?

STATE THE ANSWER. State the answer on the line given. (4 points each)

_____ 10. A uniform discrete random variable has probability on the values 1, 2, 3, 4, and 5. What is the numerical value of the expected value of this random variable?

_____ 11. Assume that seventy percent of the email served from a specific system is junk mail. Out of nine messages randomly chosen from this system, what is the probability that fewer than five of them are junk mail? State the answer with four digits past the decimal.

_____ 12. Eighteen percent of cats have a compound in their saliva that causes allergic reaction in many people. Out of six cats what is the probability that at least one of them will have this compound in their saliva? Round your answer to five digits past the decimal.

_____ 13. An experienced cabinet maker produces cabinets with only .8 flaws on average in the surface per cabinet. What is the probability of 3 or more flaws on a cabinet produced by this cabinet maker? State your answer with four digits past the decimal.

_____ 14. If on average there are 3.8 DUI arrests in Stillwater each weekend, then what is the probability of 2 or 3 DUI arrests in a weekend? Round your answer to six digits past the decimal.

_____ 15. The fight time between two cities is 92 minutes on average; the actual flight time is a uniformly distributed random variable on the interval of values between 86 and 98 minutes. What is the probability that the flight time will not exceed 95 minutes?

_____ 16. The flight time between two cities is 92 minutes on average; the actual flight time is a uniformly distributed random variable on the interval of values between 86 and 98 minutes. Ten percent of the time the flight time is less than how many minutes?

STATE THE ANSWER. State the answer on the line given. (4 points each)

The habitat of the Eastern Screech-Owl covers the entire state of Oklahoma except the western half of the panhandle. This is a common owl, active at dusk and during the night, which has excellent eyesight. The wingspan of the Eastern Screech-Owl is a normally distributed random variable with a mean of 19 inches and a standard deviation of 0.35 inches. Use this information to answer the next five questions.

_____17. Thirty-three percent of Eastern Screech-Owl wingspans are less than how many inches? State your answer with three digits past the decimal.

_____ 18. Ninety five percent of the Eastern Screech-Owl wingspans are between what two values? State two values with three digits past the decimals.

_____ 19. What is the probability that the Eastern Screech-Owl wingspan is between 19.133 and 19.868 inches?

_____ 20. What is the probability that the Eastern Screech-Owl wingspan is more than 18.475 inches?

_____ 21. Only 1.5% of the wingspans of the Eastern Screech-Owl exceed how many inches?

STATE THE ANSWER. State the answer on the line given. (4 points each)

Assume 100 observations were randomly drawn from a population of investment returns with a mean of 1,650 dollars and a standard deviation of 50 dollars. Use this information to answer the remaining questions.

_____ 22. What is the numerical value of the mean of all possible sample means that would result from the above situation?

_____ 23. What is the numerical value of the standard deviation of all possible sample means that would result from the above situation?

_____ 24. Only 0.25% (or 0.0025) of the sample means that result from the above sampling situation will be less than what value?

_____ 25. What is the probability that the sample mean that results from the above situation will be between 1,647 and 1,657 dollars?