STATISTICS 2023 NAME, IN INK_____

EXAM TWO SIGNATURE, IN INK_____

SPRING 2005 SS NUMBER, 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. Discrete and continuous random variables have probability on intervals of possible values for the variables, but no probability on specific values for the variables.

_____ 2. The probability associated with the values of a continuous variable is represented by the area under the probability density function.

_____ 3. The Poisson random variable is the number of outcomes of interest in n independent trials.

_____ 4. The normal distribution always has half of the probability on values that are less than the mean of the variable and half of the probability on values that are greater than the mean of the variable.

_____ 5. The number of textbooks owned by a student each semester is a discrete random variable.

_____ 6. The sampling distribution of the sample mean has the same variance as the distribution of the sampled population for any sample size.

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

_____ 7. Find z_o if $P(Z > z_o) = 0.9750$.

_____ 8. Find the $P(-2.11 < Z < -1.54)$.

_____ 9. What is the $P(Z > -1.54)$?

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

_____ 10. In an investment that has .50 probability of making $100, .25 probability of making $125, .15 probability of making $150, and the remaining probability on making $200, what is the expected earning from this investment?

_____ 11. A gambler has the probability 0.4 to win a game. If this game is played seven times what is the probability that the gambler will win fewer than 5 times? State the answer with four digits past the decimal.

_____ 12. Sixty-Five percent of all households in the US own more than 2 cars. Suppose nine households have been randomly selected. What is the probability that at least eight of the households have more than 2 cars? State the answer with six digits past the decimal.

_____ 13. On average, 1.8 costumers enter the bookstore in Student Union every 10 minutes. What is the probability that at most three customers will enter the bookstore in _10 minutes_? State the answer with four digits past the decimal.

_____ 14. On average, 1.8 costumers enter the bookstore in Student Union every 10 minutes. What is the probability that 4 customers will enter the bookstore in _20 minutes_? State the answer with six digits past the decimal.

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

A small company in Altus, Oklahoma reimburses their employees for expenses each month. The amount of employee reimbursements each month is uniformly distributed between the values of $2,050 and $6,050. Use this information to answer the next two questions.

_____ 15. What is the probability of employee reimbursements exceeding $4,500 next month?

_____ 16. What is the expected amount of employee reimbursement per month at this company in Altus, Oklahoma?

The monthly return on a trust fund is normally distributed with mean of $1,500 and a standard deviation of $160. Use this information to answer the next three questions.

_____17. What is the expected monthly return on a fund of the type described above?

_____ 18. Only 2.5% of all the people involved in this type of trust fund enjoy returns greater than what amount?

_____ 19. What is the chance that an investor receives a return less than $1,172 on this type of trust fund?

_____ 20. In the distribution described above 87.70% of the returns will be less than what amount?

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

Assume that repeated samples of 400 observations were randomly drawn from the above population of trust fund returns with a mean of $1,500 and a standard deviation of $160. Use this information to answer the remaining questions.

_____ 21. What is the numerical value of the mean of all possible sample means that would result from the situation?

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

_____ 23. Only 2.5% (or 0.025) of the sample means that result from the above sampling situation will be more than what value?

_____ 24. What is the probability that the sample mean that results from the above situation will be between 1476 and 1510.4.?

_____ 25. What is the numerical value of the thirty-third percentile in the sampling distribution of sample means?