ANSWER SHEET

****** MATH 111 - FINAL EXAM - SPRING 2006 ******

Friday, May 5, 2006 – 8:00 AM – 12:00 NOON

PRINT NAME: ____
IN LARGE CAPITALS Last, First name

PRINT INSTRUCTOR'S NAME: ______________________________________
IN LARGE CAPITALS

CIRCLE YOUR LAB DAY: TUESDAY THURSDAY

LECTURE HOUR:

DETACH THIS ANSWER SHEET from the exam and fill in all the required information printing in LARGE CAPITAL LETTERS on both the front cover sheet of the exam and on this answer sheet.

QUESTION	ANSWER					QUESTION	ANSWER				
1.	A	B	C	D	E	11.	A	B	C	D	E
2.	A	B	C	D	E	12.	A	B	C	D	E
3.	A	B	C	D	E	13.	A	B	C	D	E
4.	A	B	C	D	E	14.	A	B	C	D	E
5.	A	B	C	D	E	15.	A	B	C	D	E
6.	A	B	C	D	E	16.	A	B	C	D	E
7.	A	B	C	D	E	17.	A	B	C	D	E
8.	A	B	C	D	E	18.	A	B	C	D	E
9.	A	B	C	D	E	19.	A	B	C	D	E
10.	A	B	C	D	E	20.	A	B	C	D	E

SCORE: ____________________

FINAL EXAM MATH 111 SPRING 2006

FRIDAY 5 MAY 2006

SECTION #: LAST NAME:

(PRINT ABOVE IN **LARGE CAPITALS**)

LECTURE HOUR: FIRST NAME:

(PRINT ABOVE IN **CAPITALS**)

ID #: INSTRUCTOR NAME:

(PRINT ABOVE IN **CAPITALS**)

CIRCLE LAB DAY: TUESDAY: THURSDAY

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RULES: You are permitted to have a calculator and writing instruments. No books or notes allowed. This exam is conducted under Tulane honor code; all work is to be your own. Detach the answer sheet from the back of the exam question booklet and fill in all the required information printing in LARGE CAPITAL LETTERS on both the front cover sheet of this exam and on the answer sheet. The exam is multiple choice. For each question, circle the letter of the correct answer on the answer sheet. The answer E) NOT means NONE OF THESE and is to be selected if none of the possible answers A) through D) is correct. Numerical calculations should be correct to 3 significant digits. At the end of the exam turn in both the answer sheet and the exam booklet of questions.

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1. Suppose that we have a box of $n = r + b + g$ distinguishable things as well as an empty red box, an empty blue box, and an empty green box. We choose r of those things to put in the red box, b to put in the blue box and g to put in the green box. The number of ways of different possible results is

A) $(n-r)!(n-b)!(n-g)!$

B) $\frac{n!}{(r!b!g!)}$

C) $\frac{r!b!g!}{n!}$

D) $\frac{r!b!g!}{(n-r)!(n-b)!(n-g)!}$

E) NOT.

2. If $P(A) = .3$, $P(B) = .6$, and $P(A \text{ or } B) = .7$, then

A) A and B are mutually exclusive

B) "A or B" is logically equivalent to "not A"

C) $P(A\&B) = .2$

D) $P(A\&B) = .18$

E) NOT.

3. If $P(A) = .3$, $P(B) = .4$, and $P(A|B) = .6$, then:

A) $P(A\&B) > P(A)$, a contradiction

B) $P(A\&B) = .24$

C) $P(A\&B) = .18$

D) A and B are independent

E) NOT.

4. If $P(A) = .4$, $P(B) = .5$, and $P(A \text{ or } B) = .7$, then it must be true that A and B are:

A) shocking events B) independent events C) certain events

D) mutually exclusive events E) NOT.

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5. Suppose that a typewriter can make 46 different symbols, including all punctuation marks but not the blank space. If we use it to type a line of 100 of these symbols, then the number of possibilities for the line is:

A) $100!/46!$

B) 100^{46}

C) $\binom{100}{46}$

D) 46^{100}

E) NOT.

6. A box of 50 gemstones contains 40 manmade diamonds and 10 natural diamonds which are indistinguishable to the naked eye from the manmade diamonds. If we randomly select 10 of the gemstones, the probability we get exactly 3 natural diamonds is:

A) $\binom{10}{3}\binom{40}{7}$

B) $\dfrac{\binom{50}{10}}{\binom{10}{3}}$

C) $\dfrac{\binom{10}{3}\binom{40}{7}}{\binom{50}{10}}$

D) $\dfrac{\binom{50}{10}}{\binom{40}{7}\binom{10}{3}}$

E) NOT.

The next 3 questions refer to X a binomial random variable with $n = 25$ and $p = .2$.

7. To three decimal place accuracy, $P(4 \leq X < 8)$ is:

A) .657 B) .533 C) .719 D) .470 E) NOT.

8. To three decimal place accuracy, the standard deviation of X is:

A) 4.000 B) 2.000 C) 1.414 D) .16 E) NOT.

9. The standard deviation of the average of 9 independent observations of X is:

A) 36 B) 4/9 C) 2/9 D) 2/3 E) NOT.

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10. If a box contains 7 green blocks, 3 blue blocks, and 5 red blocks, and if 10 blocks are drawn one after another without replacement, then the probability that exactly 2 of the LAST SIX blocks drawn are red, to three decimal place accuracy, is:

A) .294 B) .329 C) .420 D) .264 E) NOT.

For the next 3 questions assume that length of sharks is a normal random variable with $\mu = 68$ inches and $\sigma = 3.7$ inches.

11. The proportion of sharks that are between 64 and 71 inches long, to three decimal place accuracy, is:

A) .617 B) .651 C) .566 D) .703 E) NOT.

12. Of the longest 5 percent of sharks, the length of the shortest one, to the nearest tenth of an inch, is:

A) 61.9 B) 73.8 C) 74.1 D) 75.3 E) NOT.

13. If a random sample of size $n = 14$ of sharks are all measured for length and the average is computed, then the probability that this average is between 67 inches and 69 inches, to three decimal place accuracy, is:

A) .688 B) .999 C) .015 D) .058 E) NOT.

14. We wish to give a 98 percent confidence interval for the true proportion p of New Orleans residents who evacuated and returned for the last hurricane. In a random sample of 100 New Orleans residents it was found that 65 had evacuated and returned. Using this data, the 98 percent confidence interval for p, to three decimal place accuracy, is:

A) (.240,.461) B) (.639, .661) C) (.539, .761) D) (.967, .993) E) NOT.

15. We wish to estimate the mean of a normal population to within a maximum margin of error of 0.6 units with 98 percent confidence, and we know that the standard deviation is no more than 7 units. Based on this information, the minimum size sample we can use to accomplish this task is:

A) 27 B) 28 C) 736 D) 737 E) NOT.

16. If Joe and Sam are both using the same sample data to make a confidence interval for the mean of an unknown population, and if Joe is using a higher confidence level than Sam, then

A) Joe's interval has a larger margin of error than Sam's

B) Joe's interval has a smaller margin of error than Sam's

C) Joe's standard deviation will be larger than Sam's

D) Joe's mean will be smaller than Sam's

E) NOT.

17. If a population has known mean μ and standard deviation σ, but UNKNOWN probability distribution, then for the interval $(\mu - 3\sigma, \mu + 3\sigma)$ it MUST be true that:

A) the probability that a randomly selected individual falls in this interval is determined by μ and σ alone and can be determined using mathematics

B) we know that 95 percent of the population falls in this interval

C) by Chebyshev's Rule we know that at least 99.7 % of the population must fall in this interval

D) we can use the normal distribution for mean μ and standard deviation $\sigma/10$ to approximate the probability that the mean of a random sample of size 100 falls in this interval.

E) NOT.

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18. Suppose that we suspect that Acme radial tires have DIFFERENT mean life than the advertised 50000 miles. A random sample of 4 tires had a sample mean life of 60000 miles with a sample standard deviation of 8000 miles. We can assume that tire life is normally distributed. The p-value or significance of this data, as proof of our suspicion is:

A) .0124 B) .113 C) .0877 D) .0263 E) NOT.

19. If we are testing the null hypothesis H_0, at level of significance $\alpha = .01$, and the p-value of our data is .25, then it must be true that:

A) there is a 25 percent probability that H_0 is true

B) we should definitely reject H_0

C) our data is very contradictory of H_0

D) there is 25 percent chance that H_0 is false

E) NOT.

20. We test the null hypothesis that Acme 75 watt light bulbs have the same mean life as Acme 60 watt light bulbs. We can assume that light bulb life is normally distributed with standard deviation independent of bulb wattage. We find that a sample of 8 Acme 75 watt bulbs had a mean life of 743 hours with a sample standard deviation of 28 hours whereas a sample of 5 Acme 60 watt light bulbs had a mean life of 768 hours with a standard deviation of 34 hours. To three decimal place accuracy, the p-value of this data as evidence against this null hypothesis is:

A) .168 B) .176 C) .197 D) .150 E) NOT.