NAME:_____

800:072 01 **TEST** 13 OC 06 R. B. Campbell

WORK ALONE CALCULATORS PERMITTED

Four pages — point values in margin — 100 points total

Provide the best (closest) answer for each question.

(5) 1. An experiment results in one of the three simple events e_1, e_2, or e_3. If $P(e_1) = 0.3$ and $P(e_2) = 0.6$, what is $P(e_3)$?

(a) 0.0
(b) 0.1
(c) 0.2
(d) 0.3
(e) 0.4

(5) 2. An experiment results in one of the five simple events e_1, e_2, e_3, e_4, or e_5 with $P(e_1) = 0.1$, $P(e_2) = 0.3$, $P(e_3) = 0.2$, $P(e_4) = 0.3$, and $P(e_5) = 0.1$. If A consists of the simple events e_1 and e_3, and B consists of the simple events e_3, and e_5; $P(A \cup B) =$

(a) 0.2
(b) 0.4
(c) 0.6
(d) 0.8
(e) 1.0

(5) 3. If $P(A) = 0.3$, $P(B) = 0.4$, and $P(A \cup B) = 0.5$; $P(AB) =$

(a) 0.1
(b) 0.2
(c) 0.3
(d) 0.4
(e) 0.5

(5) 4. If $P(A) = 0.4$, $P(A \cup B) = 0.6$, and $P(AB) = 0.3$; $P(B) =$

(a) 0.3
(b) 0.4
(c) 0.5
(d) 0.6
(e) 0.7

(5) 5. If $P(A) = 0.4$, $P(B) = 0.5$, $P(AB) = 0.3$, and $P(A \cup B) = 0.6$; $P(A|B) =$

(a) $\frac{3}{5}$
(b) $\frac{4}{6}$
(c) $\frac{3}{4}$
(d) $\frac{4}{5}$
(e) $\frac{5}{6}$

(5) 6. Which of the following are necessary for mutually exclusive (disjoint) events?

(a) $P(A \cup B) = 1$
(b) $P(A \cap B) = 0$
(c) $P(A \cap B) = P(A)P(B)$
(d) a and b
(e) a and c

(5) 7. Which of the following are necessary for independent events?

(a) $P(A \cup B) = 1$
(b) $P(A \cap B) = 0$
(c) $P(A \cap B) = P(A)P(B)$
(d) a and b
(e) a and c

(5) 8. How many different ways can a president, vice-president, and secretary be chosen from a class of nine.

(a) 24
(b) 27
(c) 84
(d) 504
(e) 729

(5) 9. How many different ways can a committee of three be chosen from a class of nine?

(a) 24
(b) 27
(c) 84
(d) 504
(e) 729

(5) 10. If three-fourths of the students in a large class get B's, what is the probability that exactly two out of three randomly chosen students get B's?

(a) $\frac{1}{64}$
(b) $\frac{3}{64}$
(c) $\frac{9}{64}$
(d) $\frac{27}{64}$
(e) $\frac{81}{64}$

(5) 11. If 15% of widgets are defective, what is the probability that two or fewer are defective in a box of ten widgets?

(a) 0.18
(b) 0.24
(c) 0.76
(d) 0.82
(e) 0.89

(5) 12. If X is normally distributed with mean $\mu = 0$ and standard deviation $\sigma = 1$, what is the relative frequency of observations in the interval $X < .7$? (i.e., $P(X < .7)$.)

(a) .24
(b) .3
(c) .48
(d) .52
(e) .76

(5) 13. If X is normally distributed with mean $\mu = 0$ and standard deviation $\sigma = 1$, what number z_0 are 32% of the observations greater than?

(a) $z_0 = -.47$
(b) $z_0 = .37$
(c) $z_0 = .47$
(d) $z_0 = .53$
(e) $z_0 = .63$

(5) 14. If the weights of students are normally distributed with a mean of 150 pounds and a standard deviation of 25 pounds ($\mu = 150$, $\sigma = 25$), what percent of students weigh between 140 and 170 pounds?

(a) 0.13
(b) 0.38
(c) 0.44
(d) 0.66
(e) 0.88

(5) 15. If the weights of students are normally distributed with a mean of 150 pounds and a standard deviation of 25 pounds ($\mu = 150$, $\sigma = 25$), what weight are 20% (.20) of the students heavier than?

(a) 164
(b) 167
(c) 171
(d) 180
(e) 193

(5) 16. If $\frac{1}{4}$ of men wear navy socks, what is the probability that 18 or more in a group of 64 are wearing navy socks? (Recall: $\sigma = \sqrt{np(1-p)}$.)

(a) 0.16
(b) 0.19
(c) 0.24
(d) 0.28
(e) 0.33

(5) 17. If an experiment entails rolling a fair tetrahedral (four sided) die two times, how many equally likely outcomes are there?

(a) 4
(b) 7
(c) 8
(d) 10
(e) 16

(5) 18. If the weights of people are normally distributed with a mean of 150 pounds and a standard deviation of 35 pounds, what is the probability that the total weight of 12 randomly chosen individuals is more than 2000 pounds?

(a) .025
(b) .05
(c) .075
(d) .1
(e) .125

(5) 19. If X is a random variable with $P(X = 1) = 0.4$, $P(X = 2) = 0.3$, $P(X = 3) = 0.2$, and $P(X = 4) = 0.1$; what is $E[X]$ (μ_X)?

(a) 1
(b) 1.5
(c) 2
(d) 2.5
(e) 4

(5) 20. If a fair tetrahedral die ($P(X = 1) = P(X = 2) = P(X = 3) = P(X = 4) = .25$) and a fair octahedral die ($P(X = 1) = P(X = 2) = P(X = 3) = P(X = 4) = P(X = 5) = P(X = 6) = P(X = 7) = P(X = 8) = .125$) are rolled, what is the probability that the sum of the two dice is greater than or equal to ten?

(a) $\frac{2}{11}$
(b) $\frac{2}{12}$
(c) $\frac{1}{32}$
(d) $\frac{3}{32}$
(e) $\frac{3}{16}$