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You have 30 questions. You have 90 minutes to solve the exam. Please mark all your answers on the answer sheet provided to you. Make sure that the answer sheet form matches the question form. You have to submit both question paper and answer sheet but **only the answer sheet will be graded.** Good luck

Choose the best answer for each of the following questions:

Use the following to answer questions 1-3:

If the differences between the ranks of two variables are (-1, -1, 5, -2, -7, -2, 3, -3, 8) then answer the following three questions:

1. The sample size is ...
A) 9 B) 0 C) 7 D) 8
2. The value of the Spearman correlation coefficient is ...
A) -0.571 B) -0.771 C) 0.357 D) -0.383
3. The Spearman correlation coefficient value means that there is ...
A) weak negative linear relationship C) weak positive linear relationship
B) moderate negative linear relationship D) strong negative linear relationship
4. At a local university 33.3% of incoming first-year students have computers. If 5 students are selected at random, the probability that at least one has a computer is ...
A) 0.984 B) 0.996 C) 0.868 D) 0.998
5. Which of the following probability values would complete the following probability distribution

X	0	1	2	3	4
P(X)	4/25	1/25	3/5	2/25	?

- A) 3/25 B) 10/20 C) 1/20 D) 15/25
6. Suppose that every man's age(x) is exactly 3 years greater than his wife's age(y). Then the correlation coefficient(r) between x and y is ...
A) -1 B) 1 C) 0.5 D) -0.5
 7. An ID card consists of 3 letters followed by 2 digits. How many different ID cards can be made if repetitions are allowed?
A) 1757600 B) 45697600 C) 1188137600 D) 67600
 8. A graph of the independent variable, X, and the dependent variable, Y, is called ...
A) frequency polygon. B) histogram. C) scatter plot. D) pie graph.

9. The random variable X represents the number of credit cards that adults have along with the corresponding probabilities. Find the mean and the standard deviation.

X	0	1	2	3	4
$P(X)$	0.05	0.5	0.15	0.2	0.1

- A) mean = 1.8, standard deviation = 4.5 C) mean = 1.8, standard deviation = 1.8
 B) mean = 1.8, standard deviation = 1.122 D) mean = 1.8, standard deviation = 1.26

Use the following to answer questions 10-13:

In a recent study, the following data was obtained in response to the question, "Do you favor recycling in your neighborhood? "

	Yes	No	<i>No opinion</i>	Total
Males	20	13	15	48
Females	9	10	11	30
Total	29	23	26	78

If a person is selected at random, use the above table to answer the following two questions:

10. The probability that a person is a male or he has no opinion regarding recycling is ...
 A) 0.527 B) 0.192 C) 0.756 D) 0.081
11. What is the probability that a person is a male and he answered no regarding recycling?
 A) 0.703 B) 0.203 C) 0.167 D) 0.744
12. What is the probability that a person has no opinion regarding recycling?
 A) 0.192 B) 0.141 C) 0.295 D) 0.333
13. The probability that a person is a female given that she answered yes regarding recycling is ...
 A) 0.567 B) 0.310 C) 0.556 D) 0.217
14. The number of outcomes in a compound event can be ...
 A) $E=\{1\}$ B) 1 C) $E=\{1, 2, 3, 4, 5\}$ D) 5
15. A committee consisting of 8 people is to be formed from 20 males and 5 females. Find the probability that the committee will consist of males only.
 A) 0.292 B) 0.161 C) 0.219 D) 0.116
16. A survey found that 2 out of 8 students say they like statistics course. If 10 students are selected at random, find the probability that exactly 4 would have liked the statistics course.
 A) 0.03 B) 0.146 C) 0.111 D) 0.113
17. How many different tests can be made from a test bank of 20 questions if the test consists of 7 questions?
 A) 77520 B) 5040 C) 80730 D) 120

Use the following to answer questions 18-20:

An statistics instructor is interested in finding the relationship between the quiz grades of students enrolled in Statistics I (x) and Statistics II (y) at his college.

$$n = 8, \sum x = 183, \sum y = 180, \sum x^2 = 4355, \sum y^2 = 4316, \sum xy = 4312 \text{ and } \text{slop}(b) = 1.152$$

18. The value of Pearson correlation coefficient (r) is ...
A) 0.714 B) 0.754 C) 0.891 D) 0.918
19. The equation of the regression line is ...
A) $y' = 0.678 + 6.619 * x$ C) $y' = -3.846 + 1.152 * x$
B) $y' = 6.619 + 0.678 * x$ D) $y' = 1.152 + 3.846 * x$
20. Predict a Statistics II quiz score for a student who receives a 27 in Statistics I.
A) 179.391 B) 104.994 C) 24.925 D) 27.258
21. If the letters A,B,C,D,E, and F are to be used in a letter code consists of 4 digits, how many different codes are possible if the first letter must be A and repetitions are not permitted?
A) 5 B) 20 C) 60 D) 120
22. If a player rolls one die and gets a number greater than 2, he wins \$10. The cost to play the game is \$2. What is the expected value of his gain?
A) \$-3 B) \$2.333 C) \$4.667 D) \$6
23. If the value of the correlation coefficient equals -0.36, then the type of the relationship is ...
A) strong negative B) strong positive C) weak positive D) weak negative
24. If 31% of T.Vs are defective, find the mean and the standard deviation of the number of defective T.Vs for a sample of 222 T.Vs.
A) mean = 153.18, and standard deviation = 47.486
B) mean = 68.82, and standard deviation = 47.486
C) mean = 153.18, and standard deviation = 6.891
D) mean = 68.82, standard deviation = 6.891

Use the following to answer questions 25-27:

A student takes a 11-question multiple choice quiz with 3 choices for each question. If the student guesses at random on each question, answer the following three questions:

25. What is the mean number of **incorrect** answers?
A) 8 B) 3.667 C) 2 D) 7.333
26. If the lowest grade to get an A in the quiz is 10 correct out of 11, what is the probability of getting A in this quiz?
A) 4.198 B) 0.0001 C) 1.298 D) 0.000004
27. What is the standard deviation of the number of correct answers?
A) 2.444 B) 1.265 C) 1.563 D) 1.6
28. How many different 4-letter permutations can be formed from the letters in the word **question**?
A) 336 B) 1680 C) 56 D) 70

29. Which of the following is a binomial experiment?
- A) Asking a hundred people if they like vegetables.
 - B) Asking many people if they like rice.
 - C) Asking some people if they can eat vegetables.
 - D) Asking a few people if they can eat rice.
30. A newspaper advertises 4 different movies, 5 plays, and 3 baseball games for the weekend. If a couple selects 4 activities, find the probability that they attend 2 plays and 2 movie.
- A) 0.126 B) 0.02 C) 0.121 D) 0.128

Good luck
Stat 110 Team

Answer Key

1. A
2. D
3. A
4. C
5. A
6. B
7. A
8. C
9. B
10. C
11. C
12. D
13. B
14. D
15. D
16. B
17. A
18. D
19. C
20. D
21. C
22. C
23. D
24. D
25. D
26. B
27. C
28. B
29. A
30. C