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You have 40 questions. You have 120 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 answer sheets will be graded.** Good luck

Choose the **best answer** for each of the following questions:

1. A statistic that tells the number of standard deviations a data value is above the mean is called a ...
A) percentile. B) z score. C) coefficient of variation. D) quartile.
2. The student's weight is a (an) ... variable.
A) discrete B) ordinal C) nominal D) continuous
3. In order to get a sample of 40 students, a researcher divided the students population into 40 groups and then selected the fourth student from each group after numbering them randomly. The type of sampling is ...
A) random. B) stratified. C) systematic. D) cluster.
4. If the numbers 0, 1, 2 represents the number of hourly accidents in a given street during a week. The frequency table of 30 cars ...
A) has three classes. C) can be represented by bar chart.
B) has a total frequency of 30. D) A, B and C.
5. Which is a part of the five-number summary?
A) The mode. B) The mean. C) The median. D) The midrange.

Use the following to answer questions 6-7:

The coefficient of variation of the height of 20 people selected at random from a given city is found to be 15%. The weight of the selected group has a mean value 72 kg and a standard deviation 8 kg.

6. The coefficient of variation for the weight of the selected group is ...
A) 11.11 B) 8.33% C) 11.11% D) 8.33
7. The obtained results show that ...
A) the weight is more variable than height.
B) the weight is less variable than height.
C) height and weight have the same degree of variation.
D) height and weight are independent.
8. A fair coin is tossed three times. What is the probability of getting 2 heads?
A) $3/8$ B) 0 C) $1/8$ D) $5/8$

Use the following to answer questions 9-10:

For the values 7, 3, 9, 4, 12, 8, 19, 6, 54, answer the following two questions.

9. The outlier value for the given values is ...
A) 53 B) 20.5 C) 54 D) any value greater or less than IQR
10. The inter quartile range (IQR) is ...
A) 12 B) 20.5 C) 19 D) 10.5
11. When the correlation coefficient(r) equals zero, the linear relationship between the variables ...
A) is moderate. B) is strong. C) is weak. D) does not exist.
12. Which of the following events is mutually exclusive when rolling a die?
A) get a prime number and an odd number. C) get an even number and an odd number.
B) get a prime number and an even number. D) get an odd number and a number < 2 .
13. The number of outcomes in the sample space for the gender of children in a family with 7 children is ...
A) 128 B) 64 C) 256 D) 32

Use the following to answer questions 14-16:

For a class limit 69.4 - 70.5 answer the following three questions:

14. The class boundaries are ...
A) 69.35 - 70.55 B) 69.9 - 70 C) 69.45 - 70.45 D) 68.9 - 71
15. The class midpoint is ...
A) 69.5 B) 69.45 C) 69.95 D) 69.7
16. The class width ...
A) is 1.2 B) is 1.1 C) is 1.3 D) cannot be calculated
17. Determine the number of all possible outcomes of guessing the last four digits in a telephone number if repetition among the four digits is allowed.
A) 10000 B) 5040 C) 1000 D) 720

Use the following to answer questions 18-21:

In the study of the relationship between the number of daily studying hours X and the final grade in statistics Y of 8 students, the data show the following:

$$\sum X = 42, \sum Y = 470, \sum XY = 3143, \sum X^2 = 354 \text{ and } \sum Y^2 = 37358$$

18. The value of the Pearson correlation coefficient is ...
A) -0.592 B) 0.829 C) 0.592 D) -0.829
19. The value of the Pearson correlation coefficient means that there is a ... linear relationship between the number of daily studying hours and the final grade.
A) strong negative B) moderate positive C) moderate negative D) strong positive

20. The slope of the regression line is ...
 A) 2.17 B) 5.37 C) 8.48 D) 5.06
21. The final grade is called ... variable.
 A) response B) explanatory C) predictor D) independent
22. If the variance of a probability distribution is 3.6 grams, what is the standard deviation?
 A) 39.69 B) 1.9 C) 12.96 D) 2.51
23. What type of distributions is the binomial distribution?
 A) Continuous. C) Neither discrete nor continuous.
 B) Discrete. D) Discrete and continuous.
24. Which one of the following is NOT one of the binomial distribution requirements?
 A) Only two outcomes.
 B) At least 10 observations.
 C) Probability of success remains constant from trial to trial.
 D) Independent trials.
25. Ten thousand tickets are sold at 100 SAR each for a car valued at 45000 SAR. What is the expected value of the gain if a person purchases two tickets?
 A) -190 B) -150 C) -165 D) -191
26. Determine which one of the following is a probability distribution.
- A)

X	2	3	4	5	6
P(X)	2/3	2/5	2/7	2/9	2/11
- B)

X	-4	-3	-2	-1	0
P(X)	1/8	1/4	1/8	1/4	1/4
- C)

X	-2	-1	0	1	2
P(X)	1/4	1/4	1/4	1/4	1/4
- D)

X	-2	-1	0	1	2
P(X)	1/5	1/10	1/10	1/5	1/5
27. The Spearman rank correlation coefficient can be calculated for ... variable(s).
 A) ordinal B) quantitative C) nominal D) ordinal and quantitative
28. Find the variance of the following probability distribution
- | | | | | | |
|------|-----|-----|-----|-----|-----|
| X | -2 | -1 | 0 | 1 | 2 |
| P(X) | 1/5 | 1/5 | 1/5 | 1/5 | 1/5 |
- A) 0 B) 4 C) 1.414 D) 2

Use the following to answer questions 29-31:

A multiple choice quiz consists of 6 questions, each with 5 possible answers. If a student guesses the answer of each question, then

29. the probability of at least one correct answer is ...
 A) 0.738 B) 0.607 C) 0.598 D) 0.709
30. the mean number of correct answers is ...
 A) 0.83 B) 1.20 C) 0.875 D) 1.14

31. the probability of guessing exactly two correct questions is ...
A) 0.246 B) 0.161 C) 0.227 D) 0.168
32. The mean of a normal probability distribution is 500 and the standard deviation is 10. About 95 percent of the observations lie between what two values?
A) 490 and 510 B) 480 and 520 C) 470 and 530 D) 450 and 550
33. The standard normal probability distribution is unique because it has ...
A) Mean of 1 and variance of 0. C) Mean of 0 and any variance.
B) Mean of 1 and any variance. D) Mean of 0 and variance of 1.

Use the following to answer questions 34-38:

The scores of a college entrance test is normally distributed with mean 500 and a standard deviation 75. Answer the following five questions:

34. Find the percentage of students who scored between 485 and 590.
A) 46.42% B) 68.53% C) 58.20% D) 23.94%
35. Find the lowest score for the top 10% of students.
A) 514 B) 451.2 C) 596 D) 464
36. If a sample of 36 students are selected, find the probability that the mean scores of the sample is below 510.
A) 0.9332 B) 0.7881 C) 0.9641 D) 0.8849
37. Find the percentage of students who scored below 320.
A) 0.47% B) 2.28% C) 0.82% D) 5.48%
38. Find the percentage of students who scored above 455.
A) 46.02% B) 15.87% C) 13.57% D) 72.57%
39. If the standard deviation of a population is 48 and we took a sample of size 32, then the standard error of the mean (the standard deviation of the sample mean) is ...
A) 8.398 B) 11.685 C) 14.849 D) 8.485
40. Which is NOT a property of the normal distribution?
A) It has a mean of 0 and a standard deviation of 1.
B) It has a single peak.
C) The mean equals the median.
D) It is unimodal.

Good luck
Stat 110 Team

Answer Key

1. B
2. D
3. C
4. D
5. C
6. C
7. B
8. A
9. C
10. D
11. D
12. C
13. A
14. A
15. C
16. A
17. A
18. C
19. B
20. D
21. A
22. B
23. B
24. B
25. D
26. B
27. D
28. D
29. A
30. B
31. A
32. B
33. D
34. A
35. C
36. B
37. C
38. D
39. D
40. A