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

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 16%. The weight of the selected group has a mean value 72 kg and a standard deviation 6 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 less variable than height.  
B) height and weight are independent.  
C) the weight is more variable than height.  
D) height and weight have the same degree of variation.

Use the following to answer questions 8-9:

For the values 6, 2, 8, 3, 14, 7, 18, 5, 53, answer the following two questions.

8. The inter quartile range (IQR) is ...  
A) 20.5      B) 19      C) 10.5      D) 12

9. The outlier value for the given values is ...  
**A)** 31      **B)** 53      **C)** any value greater or less than IQR      **D)** 54
10. A fair coin is tossed three times. What is the probability of getting 2 tails?  
**A)** 1/8      **B)** 5/8      **C)** 3/8      **D)** 0
11. Which of the following events is mutually exclusive when rolling a die?  
**A)** get a prime number and an even number.      **C)** get a prime number and an odd number.  
**B)** get an even number and a number < 3.      **D)** get an even number and a number < 2.
12. The linear relationship between two variables ... when the correlation coefficient( $r$ ) equals zero.  
**A)** does not exist      **B)** is strong      **C)** is weak      **D)** is moderate
13. The number of outcomes in the sample space for the gender of children in a family with 6 children is ...  
**A)** 256      **B)** 32      **C)** 64      **D)** 128
14. Determine the number of all possible outcomes of guessing the last three digits in a telephone number if repetition among the three digits is allowed.  
**A)** 720      **B)** 10000      **C)** 1000      **D)** 5040

Use the following to answer questions 15-18:

In the study of the relationship between the number of daily studying hours  $X$  and the final grade in statistics  $Y$  of 28 students, the data show the following:

$$\sum X = 45, \sum Y = 470, \sum XY = 3143, \sum X^2 = 354 \text{ and } \sum Y^2 = 37358$$

15. The value of the Pearson correlation coefficient is ...  
**A)** 0.829      **B)** 0.592      **C)** -0.829      **D)** -0.592
16. 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)** moderate positive      **B)** strong negative      **C)** moderate negative      **D)** strong positive
17. The slope of the regression line is ...  
**A)** 5.06      **B)** 5.37      **C)** 8.48      **D)** 2.17
18. The final grade is called ... variable.  
**A)** independent      **B)** outcome      **C)** explanatory      **D)** predictor
19. The Spearman rank correlation coefficient can be calculated for ... variable(s).  
**A)** ordinal and quantitative      **B)** nominal      **C)** ordinal      **D)** quantitative
20. Ten thousand tickets are sold at 100 SAR each for a car valued at 50000 SAR. What is the expected value of the gain if a person purchases two tickets?  
**A)** -165      **B)** -150      **C)** -191      **D)** -190
21. Which one of the following is NOT one of the binomial distribution requirements?  
**A)** Fixed number of trails.  
**B)** Independent trials.  
**C)** Only two outcomes.  
**D)** Probability of success changes from trial to trial.

22. What type of distributions is the binomial distribution?  
 A) Neither discrete nor continuous.                      C) Discrete.  
 B) Discrete and continuous.                                D) Continuous.

23. Find the variance of the following probability distribution

X	-4	-1	0	1	4
P(X)	1/5	1/5	1/5	1/5	1/5

- A) 0                      B) 4                      C) 2                      D) 6.8

24. Determine which one of the following is a probability distribution.

A) 

X	1	2	3	4	5
P(X)	2/3	2/5	2/7	2/9	2/11

B) 

X	-2	-1	0	1	2
P(X)	1/6	1/12	1/12	1/6	1/6

C) 

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

D) 

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

25. If the variance of a probability distribution is 6.3 grams, what is the standard deviation?  
 A) 39.69                      B) 12.96                      C) 1.9                      D) 2.51

Use the following to answer questions 26-28:

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

26. the mean number of correct answers is ...  
 A) 1.20                      B) 0.83                      C) 0.875                      D) 1.14
27. the probability of guessing exactly two correct questions is ...  
 A) 0.227                      B) 0.168                      C) 0.161                      D) 0.246
28. the probability of at least one correct answer is ...  
 A) 0.607                      B) 0.738                      C) 0.598                      D) 0.709
29. The mean of a normal probability distribution is 600 and the standard deviation is 20. About 95 percent of the observations lie between what two values?  
 A) 550 and 650                      B) 540 and 660                      C) 580 and 620                      D) 560 and 640

Use the following to answer questions 30-34:

The scores of a college entrance test is normally distributed with mean 450 and a standard deviation 50. Answer the following five questions:

30. Find the percentage of students who scored above 455.  
 A) 72.57%                      B) 15.87%                      C) 13.57%                      D) 46.02%
31. If a sample of 36 students is selected, find the probability that the mean scores of the sample is below 465.  
 A) 0.7881                      B) 0.9332                      C) 0.9641                      D) 0.8849

32. Find the percentage of students who scored between 485 and 590.  
 A) 58.20%      B) 46.42%      C) 68.53%      D) 23.94%
33. Find the lowest score for the top 10% of students.  
 A) 464      B) 596      C) 514      D) 451.2
34. Find the percentage of students who scored below 320.  
 A) 2.28%      B) 0.47%      C) 0.82%      D) 5.48%
35. The standard normal probability distribution is unique because it has ...  
 A) Mean of 1 and any variance.      C) Mean of 0 and any variance.  
 B) Mean of 1 and variance of 0.      D) Mean of 0 and variance of 1.
36. If the standard deviation of a population is 84 and we took a sample of size 32, then the standard error of the mean (the standard deviation of the sample mean) is ...  
 A) 14.849      B) 11.685      C) 8.485      D) 8.398
37. 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) It is unimodal.  
 D) The mean equals the median.

Use the following to answer questions 38-40:

For a class limit 80.5 - 96.4 answer the following three questions:

38. The class boundaries are ...  
 A) 80 - 96.9      B) 81 - 95.9      C) 80.55 - 96.35      D) 80.45 - 96.45
39. The class midpoint is ...  
 A) 88.5      B) 88.45      C) 88.7      D) 88.95
40. The class width ...  
 A) is 1.2      B) is 16      C) cannot be calculated      D) is 15.9

Good luck  
 Stat 110 Team

## Answer Key

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