KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
Term 163

STAT 211 BUSINESS STATISTICS I

Final Exam

Tuesday August 22, 2017

7:00 PM - 9:30 PM

Name:_____

ID #:_____

Serial#:_____

SECTION: 1 2

Answer Sheet:

ID: _____ **Name:**_____ **Sr.:** _____

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

1) An economist is interested in studying the incomes of consumers in a particular country. The population standard deviation is known to be $1,000. A random sample of 50 individuals resulted in a mean income of $15,000. What is the upper end point in a 99% confidence interval for the average income?

A. $15,052

B. $15,141

C. $15,330

D. $15,364

2) The width of a confidence interval estimate for a proportion will be

A. narrower for 99% confidence than for 95% confidence.

B. wider for a sample size of 100 than for a sample size of 50.

C. narrower for 90% confidence than for 95% confidence.

D. narrower when the sample proportion is 0.50 than when the sample proportion is 0.20.

3) A university dean is interested in determining the proportion of students who receive some sort of financial aid. Rather than examine the records for all students, the dean randomly selects 200 students and finds that 118 of them are receiving financial aid. The 95% confidence interval for π is 0.59 ± 0.07. Interpret this interval.

A. We are 95% confident that the true proportion of all students receiving financial aid is between 0.52 and 0.66.

B. 95% of the students get between 52% and 66% of their tuition paid for by financial aid.

C. We are 95% confident that between 52% and 66% of the sampled students receive some sort of financial aid.

D. We are 95% confident that 59% of the students are on some sort of financial aid.

4) A confidence interval was used to estimate the proportion of statistics students who are females. A random sample of 72 statistics students generated the following 90% confidence interval: (0.438, 0.642). Based on the interval above, is the population proportion of females equal to 0.60?

A. No, and we are 90% sure of it.

B. No. The proportion is 54.17%.

C. Maybe. 0.60 is a believable value of the population proportion based on the information above.

D. Yes, and we are 90% sure of it.

5) If we wish to construct a 95% confidence interval estimate for the difference between two population proportions, then the confidence level would be

A. 1.96

B. 0.95

C. 0.475

D. 0.05

6) The z value needed to construct 92.5% confidence interval estimate for the difference between two population proportions is

A. 2.58

B. 2.33

C. 1.96

D. 1.78

7) Which of the following descriptive statistics is least affected by outliers?

A. Mean

B. Median

C. Range

D. Standard deviation

8) A computer information systems professor is interested in studying the amount of time it takes students enrolled in the introduction to computers course to write and run a program in Visual Basic. The professor hires you to analyze the results (in minutes) from a random sample of nine students with $\sum_{1}^{9} x = 98,\ \sum_{1}^{9} x^2 = 1182,$

using a 95% Confidence interval for the mean time to write and run a program in Visual Basic, we conclude:

A. with probability 95%, the true mean time to write and run a program in Visual Basic is between 7.98 and 13.80 minutes.

B. we are 95% confident that the true mean time to write and run a program in Visual Basic is not different than 10 minutes.

C. We are 95% confident that the time needed to write and run a program in Visual Basic for the sampled students is between 7.98 minutes and 13.80 minutes.

D. we are 95% confident that the true mean time to write and run a program in Visual Basic is 10.89 minutes.

9) The sample size needed to estimate a population mean to within 50 units was found to be 97. If the population standard deviation was 250, then the confidence level used was

A. 99%

B. 95%

C. 90%

D. 80%

10) In a recent survey of 240 teachers in Richmond, Virginia, 77.2% supported standardized national testing of elementary students. In a survey of 162 teachers in Raleigh, North Carolina, 64.2% supported national testing. Find a 99% confidence interval for the difference between the two population proportions.

A. 0.13 ± 0.119

B. 0.13 ± 0.092

C. 0.13 ± 0.135

D. 0.13 ± 0.148

11) In calculating 95% confidence interval for $(\mu_1 - \mu_2)$ the difference between the means of two normally distributed populations **with equal variances**, summary statistics from two independent samples are: $n_1 = 10,\ \bar{x}_1 = 50,\ S_1^2 = 0.64,\ n_2 = 10,\ \bar{x}_2 = 40,\ s_2^2 = 1.86$

What is the **upper limit** of the confidence interval?

A. 10.953

B. 9.047

C. 9.216

D. 10.784

12) If all possible samples of size n are drawn from an infinite population with a mean of 20 and a standard deviation of 5, then the standard error of the sampling distribution of sample means is equal to 1.0 only for samples of size

A. 5.

B. 15.

C. 20.

D. 25.

13) After calculating the sample size needed to estimate a population proportion to within 0.04, your statistics professor told you the maximum allowable error must be reduced to just 0.01. If the original calculation led to a sample size of 800, the sample size will now have to be:

A. 800
B. 3200
C. 12,800
D. 6400

14) You have recently joined a Weight Watchers club. Suppose that the number of times you expect to visit the club in a month is represented by a normally distributed random variable with a mean of 12 and a standard deviation of 2.50. The probability is 85% that you average less than how many visits to the club per month over the course of next year?

A. 12.75
B. 11.50
C. 12.50
D. 11.75

15) Suppose that 20% of all invoices are for amounts greater than $800. A random sample of 50 invoices is taken. What is the mean and standard error of the sample proportion of invoices with amounts in excess of $800?

A. Mean = 10, Standard error = 0.4472
B. Mean = 0.20, Standard error = 0.0566
C. Mean = 0.20, Standard error = 0.0032
D. Mean = 10, Standard error = 0.0598

16) If all possible samples of size n are drawn from a population, the probability distribution of the sample means is called the:

A. standard error of the sample mean
B. expected value of the sample mean
C. sampling distribution of sample means
D. normal distribution

17) The amount of time you have to wait at a particular stoplight is uniformly distributed between zero and two minutes. Eighty percent of the time, the light will change before you have to wait how long?

A. 90 seconds
B. 24 seconds
C. 30 seconds
D. 96 seconds

18) Over the past 10 years, the return on Stock A has averaged 8.4% with a standard deviation of 2.1%. The return on Stock B has averaged 3.6% with a standard deviation of 0.9%. Which of the following statements is true?

A. Stock A has smaller relative variation than Stock B.
B. Stock B has smaller relative variation than Stock A.
C. Both stocks exhibit the same relative variation.
D. Unable to tell with the given information.

19) Let the random variable X follow a normal distribution with a **mean of 61.7** and a **standard deviation of 5.2**. What is the value of k such that $P(59 < X < k) = 0.54$?

A. 65.8
B. 64.6
C. 63.7
D. 66.9

Consider the following probability distribution function.

x	0	1	2	3	4	5	6	
P(x)	0.07	0.19	0.23	0.17	0.16	0.14	0.04	

20)What is the standard deviation of X?

A. 13.25
B. 3.64
C. 1.62
D. 4.13

21)Which of the following is true?

A. $P(X > 3) = 0.51$
B. $P(2 \leq X \leq 5) = 0.33$
C. $P(X \geq 3) = 0.51$
D. $P(X < 6) = 1$

22) Which of the following statements is false?

A. Relative frequencies are often useful in a presentation because nearly everybody understands fractional parts when expressed as percents.
B. Relative frequencies are particularly useful when comparing the frequency distributions of two different size sets of data.
C. The histogram of a sample should have a distribution shape that is skewed.
D. A stem-and-leaf display contains all the information needed to create a histogram.

A survey of recent e-commerce start-up firms was undertaken at an industry convention. Representatives of the firm where asked for the geographic location of the firm as well as the firm's outlook for growth in the coming year. The results are provided below.

		Region				
		Northeast	South	Midwest	West	**total**
Expected Growth	Low	0.04	0.12	0.14	0.19	**0.49**
	Medium	0.05	0.08	0.06	0.12	**0.31**
	High	0.03	0.05	0.08	0.04	**0.2**
	total	**0.12**	**0.25**	**0.28**	**0.35**	**1**

23) What is the probability that one of these start-up firms was from the Northeast?

A. 0.04

B. 0.12

C. 0.49

D. 0.33

24) Are the events "firm from the South" and "expects high growth" statistically independent?

A. Yes

B. No

C. Unable to tell from the data

D. Maybe

25) If the firm interviewed was from the West, what is the probability that it expected medium or high growth?

A. 0.24

B. 0.35

C. 0.16

D. 0.46

26) Which of the following statements is false?

A. Pareto diagram is a bar graph with the bars arranged from the most numerous categories to the least numerous categories.

B. Pareto diagram includes a line graph displaying the cumulative percentages and counts for the bars.

C. A Pareto diagram of types of defects will show the ones that have the greatest effect on the defective rate in order of effect. It is then easy to see which defects should be targeted in order to most effectively lower the defective rate.

D. None of the above.

27) Which of the following best describes the data: grade point averages for athletes?

A. Categorical data

B. Quantitative data

C. Qualitative data

D. Relative frequency data

28) A college placement office conducted a survey of 100 engineers who had graduated from Stanford University. For these engineers, the mean salary was computed to be $72,000 with a standard deviation of $8,000. The percentage of these engineers who earn **more than** $96,000 **or less than** $48,000 is

A. Approximately 0%.

B. At least 5.6% (1/18 of the engineers).

C. At most 5.6% (1/18 of the engineers).

D. At most 11.1% (1/9 of the engineers).

To test the effectiveness of a business school preparation course, 8 students took a general business test before and after the course. Use the MINITAB output to answer the questions below.

Paired CI: Score Before Course (1) - Score After Course (2)

	N	Mean	StDev	SE Mean
Score Before Course (1)	8	693.8	155.4	54.9
Score After Course (2)	8	743.8	143.9	50.9
Difference	8	-50.0	65.03	????

95% CI for mean difference: (???, 4.4)

29) The lower limit of the 95% C.I. for the mean difference score is:

A. -2.365

B. 2.365

C. -104.375

D. 1.895

30) Based on the 95% C.I., the conclusion about the effectiveness of a business school preparation course would be:

A. the business school preparation course does improve exam score.

B. the business school preparation course does not improve exam score.

C. the business school preparation course has no impact on exam score.

D. It cannot be drawn from the information given.