KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
Term 181

STAT 211 BUSINESS STATISTICS I
Final Exam
22 December 2018 at 8:00 AM-10:00 AM

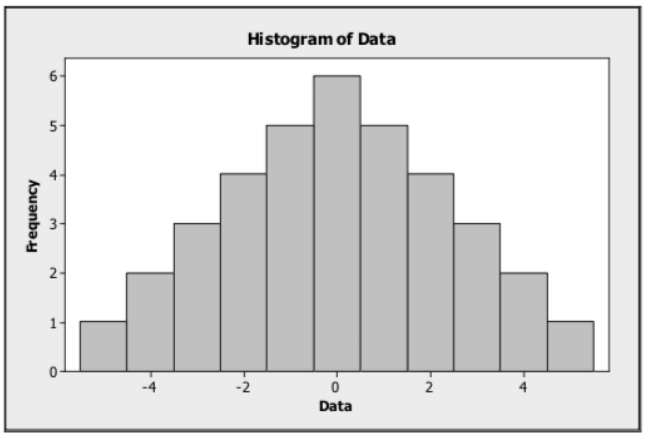
ID: _____ **Name:**_____ **Sr.:** _____

Please mark the correct answer to each of the questions

Question	ANSWER				
Q1	A	B	C	D	E
Q2	A	B	C	D	E
Q3	A	B	C	D	E
Q4	A	B	C	D	E
Q5	A	B	C	D	E
Q6	A	B	C	D	E
Q7	A	B	C	D	E
Q8	A	B	C	D	E
Q9	A	B	C	D	E
Q10	A	B	C	D	E

Question	ANSWER				
Q11	A	B	C	D	E
Q12	A	B	C	D	E
Q13	A	B	C	D	E
Q14	A	B	C	D	E
Q15	A	B	C	D	E
Q16	A	B	C	D	E
Q17	A	B	C	D	E
Q18	A	B	C	D	E
Q19	A	B	C	D	E
Q20	A	B	C	D	E
Q21	A	B	C	D	E

1. Which is true for the data shown in the histogram?



I. The distribution is approximately symmetric.
II. The mean and median are approximately equal.
III. The median and IQR to summarize these data summarize the data better than the mean and standard deviation.

A. I only
B. III only
C. I and II
D. I and III
E. I, II and III

2. Which of the following statements is true for the stem-and-leaf?

```
Stem-and-leaf of Home Prices
N   = 13, Leaf Unit = 10000

 4    1   5788
(4)   2   0123
 5    2   89
 3    3   0
 2    3   5
 1    4   0
```

A. This distribution is left skewed.
B. This distribution is fairly symmetric.
C. The mean would be more appropriate than the median to describe the center of this distribution.
D. This distribution is right skewed.
E. Both A and C

3. Suppose a sample of 60 business majors revealed that the average time spent studying per week is 22 hours with a standard deviation of 4 hours. For one student reporting that he studies 16 hours per week, the corresponding *z* score is

A. 1.5
B. -1.5
C. 2.2
D. -2.2
E. -3.0

4. The following data show the education and employment status of women aged 20–29:

	Higher Education	A levels	Other Qualification	No Qualification	**Total**
In work	209	182	577	92	**1060**
Unemployed	12	9	68	32	**121**
Inactive	17	34	235	136	**422**
Sample size	**238**	**225**	**880**	**260**	**1603**

Which education category has the highest proportion of women in work? What is the proportion?

A. Higher Education, 88%

B. A levels, 13%

C. Other Qualification, 36%

D. No Qualification, 35%

E. Other Qualification, 66%

5. A social scientist for a children's advocacy organization has randomly selected 10 Saturday-morning television cartoon shows and carried out a content analysis in which he counts the number of incidents of verbal or physical violence in each. For the 10 cartoons examined, the counts were as follows:

27	12	17	22	15	28	14	32	11	20

Determine the mean, the median, the mode and standard deviation for these data. (Given: $\sum^{10} x = 198$, $\sum^{10} x^2 = 4396$)

A. Mean=18.5, Median=18.5, Mode=19.8 and Std. Dev.=7.90

B. Mean=19.8, Median=15 , No Mode and Std. Dev.=7.90

C. Mean=19.8, Median=18.5 , No Mode and Std. Dev.=7.27

D. Mean=18, Median=15 , Mode=27 and Std. Dev.=7.27

E. Mean=19.1, Median=17.5 , Mode=30 and Std. Dev.=7.90

6. For a sample of 12 employers, the most recent hourly wage (Cents per hour) increases were

2	5	7	12	15	18	19	20	25	30	40	55

For these sample data, calculate the interquartile range.

A. 8.25

B. 28.75

C. 20.5

D. 53

E. 26.5

7. ‘Roll six sixes to win a Mercedes!’ is the announcement at a fair. You have to roll six dice. If you get six sixes you win the car, valued at $40,000. The entry ticket costs $1. What is your expected gain or loss on this game?

A. $0.143 gain

B. $0.021 gain

C. $1.441 loss

D. $0.143 loss

E. $0.543 loss

8. If A and B are independent events with P(A) = 0.60 and P(B) = 0.70, then the probability that A occurs or B occurs or both occur is:

A. 1.30
B. 0.42
C. 0.10
D. 1.00
E. 0.88

9. It was found that 84% of all stockbrokers drink coffee each day. Furthermore, 64% eat candy bar each day. Finally, half of those stockbrokers who do not drink coffee, eat a candy bar. Given a stockbroker eats candy, What is the probability that he drinks coffee?

A. 0.360
B. 0.875
C. 0.560
D. 0.280
E. 0.92

10. Suppose you know that the number of complaints coming into a phone center averages 4.2 every ten minutes. Assume that the number of calls follows the Poisson distribution. What is the probability that there are exactly four calls during the next five minutes?

A. 0.194
B. 0.172
C. 0.099
D. 0.156
E. 0.134

11. In a population of students who just passed high school, IQ (the intelligence quotient) is Normally distributed with mean 100 and standard deviation 16. If top 10% of the students will get admission in the university, what is the minimum IQ required for securing an admission in university?

A. 120.48
B. 1.28
C. 100
D. 113.78
E. 102.048

12. The average income of a country is known to be $10,000 with standard deviation $2,500. A sample of 40 individuals is taken and their average income calculated. What is the probability of the sample mean being over $10,500?

A. 0.4207

B. 0.5793

C. 0.1038

D. 0.8962

E. 0.3974

13. A sample of 12 families in a town reveals an average income of $25,000 with standard deviation $6,000. We are 95% confidence interval that the average income in the town belongs to

A. [21605 , 28395]

B. [21188 , 28812]

C. [21188 , 28395]

D. [21605 , 28812]

E. [19621, 30379]

14. A random sample of record shops is to be selected for estimating the average weekly sale of a particular CD. The true standard deviation is known to be 96. To compile the CD chart it is necessary to know the correct average weekly sale to be within ±13 of its true value. Assume we want to be 95% confident, How large a sample size is required?

A. 209

B. 148

C. 210

D. 1356

E. 100

15. A 98% confidence interval estimate for a population mean μ is determined to be 75.38 to 86.52. If the confidence level is reduced to 90%, the confidence interval for μ

A. becomes narrower.
B. becomes wider.
C. remains the same.
D. need more information to decide.
E. none of the above answers is correct.

EU (European Union) countries report that 46% of their labor force is female. The United Nations wants to determine if the percentage of females in the U.S. labor force is the same. Representatives from the United States Department of Labor plan to check a random sample of over 10,000 employment records on file to estimate the percentage of females in the U.S. labor force.

16. The Department of Labor wants to estimate the percentage of females in the U.S. labor force to within ±5% with 90% confidence. How many employment records should be sampled?

A. 121
B. 451
C. 382
D. 1000
E. 269

17. They actually select a random sample of 525 employment records, and find that 229 of the people are females. The 90% confidence interval is

A. 0.2747 to 0.5973
B. 0.1776 to 0.6944
C. 0.3998 to 0.4722
D. 0.4235 to 0.5679
E. 0.1243 to 0.7100

18.The heights of 10 men and 15 women were recorded, with the following results:

	Mean	Variance
Men	173.5	80
Women	162	75

Estimate the true difference between men's and women's heights. Use the 95% confidence level and assume equal variances.

A. [4.39,18.61]

B. [5.61,17.39]

C. [5.39,17.61]

D. [4.39,17.39]

E. [4.09,18.91]

19.Sixty-six percent out of 150 students from school A passed an exam; 60% of 120 students at school B passed. Estimate the 90% confidence interval for the true difference between the proportions passing the exam.

A. [-0.0373, 0.1573]

B. [-0.0559,0.1759]

C. [-0.0923, 0.2123]

D. [-0.0923, 0.1573]

E. [-0.0373, 0.1759]

A mid-sized company has decided to implement an enterprise resource planning (ERP) system and management suspects that many of its employees are concerned about the planned implementation. They are considering holding informational workshops to help decrease anxiety levels among employees. In order to determine whether such an approach would be effective, they randomly select 16 employees to participate in a pilot workshop. These employees were given a questionnaire to measure anxiety levels about ERP before and after participating in the workshop.

Pre-workshop anxiety level	7	6	9	5	6	7	5	7	6	4	3	2	1	3	4	2
Post-workshop anxiety level	4	3	7	3	4	5	4	6	5	3	2	2	1	3	4	3
Difference (Post – Pre)	-3	-3	-2	-2	-2	-2	-1	-1	-1	-1	-1	0	0	0	0	1

20.The 90% C.I. for the mean difference:

A. [-1.6873, -0.5627]
B. [-3.1366, 0.8866]
C. [-1.6279, 0.6221]
D. [1.6279, -0.6221]
E. [-1.6279, -0.6221]

21.Assume the 95% C.I. for the mean difference is [-1.6279, -0.5135], then:

A. we can conclude that participating in this workshop reduces employee anxiety levels about ERP.
B. we cannot conclude that participating in this workshop reduces employee anxiety levels about ERP.
C. Since 0 belongs to the interval, we can conclude that participating in this workshop reduces employee anxiety levels about ERP.
D. Since both limits are negative, we can not conclude that participating in this workshop reduces employee anxiety levels about ERP.
E. Both B and D.