المملكة العربية السعودية

وزارة التعليم

MINISTRY OF EDUCATION

وفوق كل ذي علم عليم

هام

لكل المهتمين و المهتمات
بدروس و مراجع الجامعية

145 Stat- first mid term exam- second semester 1430-1431

Department of Statistics and Operations Research
College of Science
King Saud University

Name of Student: ____________________________ Student's Number: _________

Teacher's name: Dr. _______________ Section number:____________

1	2	3	4	5	6

7	8	9	10	11	12

13	14	15	16	17	18

19	20	21	22	23	24

Marks for the term	

- Mobile Telephones are not allowed in the classrooms
- Time allowed is 1 and 1/2 hours
- Attempt all questions
- Choose the nearest number to your answer
- For each question, put the code of the correct answer in the above table under the question number

Q1- The following information has been collected from 75 patients who visited the diabetic clinic in Riyadh:

Age (years)	Frequency	Relative Frequency	Cumulative Frequency
05 - 14	6	0.08	6
15 - 24	9	**X**	15
25 - 34	**Y**	0.24	33
35 - 44	24	0.32	57
45 - 54	15	0.20	**Z**
55 - 64	3	0.04	75

1- the value of **X** is :

<u>A) 0.12</u> B) 0.20 C) 9 D) 12

2- the value of **Y** is :

A) 0.18 B) 0.20 <u>C) 18</u> D) 12

3- the value of **Z** is :

A) 80 B) 0.20 C) 0.72 <u>D) 72</u>

4- If the ages have mean=35.1 and standard deviation = 12.76, then the coefficient of variation ($C.V$) of the ages is :

A) 0.765 <u>B) 36.35%</u> C) 162.82 D) 12.76

5- the unit of the $C.V$ of age is :

A) Year B) kg <u>C) No unit</u> D) None

6- If the $C.V$ of the patient weight is 27.5%, then:

<u>A) Age has more variability</u> B) Weight has more variability

C) Both have the same variability D) None

Q2- If one person is selected randomly from a set of 75 persons which are classified according to three categories of ages and three categories of weights:

	Slim (S)	Normal (N)	Fat (F)	
(05 – 24) year ($A1$)	15	10	2	**27**
(25 – 44) year ($A2$)	10	12	3	**25**
(45 – 64) year ($A3$)	7	11	5	**23**
	32	**33**	**10**	**75**

7- The probability $P(A1 \cup N)$ is:

A) 4/5 <u>B) 2/3</u> C) 2/15 D) 72

8- The probability $P(A1 | N)$ is:

A) 10/27 B) 10/75 <u>C) 10/33</u> D) None

9- The probability $P(\overline{N})$ is

A) 13/75 B) 12/75 C) 11/25 <u>D) 14/25</u>

10- The events $A1$ and N are:

A) Independent <u>B) Dependent</u> C) Disjoint D) None

11- The events S and F are:

A) Mutually exclusive (Disjoint) B) Not Disjoint

C) Independent D) None

12- The probability $P(S \cup F)$ is:

A) 14/25 B) 2/3 C) 1/3 D) 11/25

Q3- the weights to nearest kg of 7 patients are: 16, 10, 9, 46, 15, 16, 10:

13- the median of weight is:

A) 10 B) 15 C) 19.1 D) 46

14- the mean of weight is:

A) 10 B) 15 C) 19.1 D) 17.43

15- this data has:

A) One mode B) Two modes C) Three modes D) No mode

16- for this data, the best of center measure is:

A) The mode B) The median C) The mean D) None

17- The range of this data is:

A) 7 B) -6 C) 6 D) 37

18- The standard deviation of this data is:

A) 167.95 B) 12.96 C) 17.43 D) 12.0

Q4- In order to check the reliability of a given Lab in Riyadh, suppose a sample with diabetic disease (D) and another without disease ($\overline{D}$) had the Lab tests and the results are as given below:

	Present (D)	Absence ($\overline{D}$)
Positive (T)	630	15
Negative ($\overline{T}$)	20	335

Use this data to answer the questions:

19- The probability of false positive result is:

A) 3/70 B) 7/20 C) 2/65 D) 7/200

20- The probability of false negative result is:

A) 3/70 B) 7/20 C) 2/65 D) 7/200

21- The sensitivity of the test is:

A) 67/70 B) 3/70 C) 2/65 D) 63/65

22- The specificity of the test is:

A) 67/70 B) 3/70 C) 2/65 D) 63/65

If the true Diabetic percentage in Riyadh is 20%, then:

23- The predictive value positive of the test is:

A) 0.977 B) 0.85 C) 0.944 D) 0.992

24- The predictive value negative of the test is:

A) 0.977 B) 0.85 C) 0.944 D) 0.992

Department of Statistics
& **Operations Research**
College of Science, King Saud University

STAT 145
Test I
Semester I, 1432 – 1433 H

Student Name:			
Student Number:		**Section Number:**	
Teacher Name:		**Attendance Number**	

- Mobile Telephones are <u>not allowed</u> in the classrooms.
- Time allowed is <u>90 minutes</u>
- Answer all questions.
- Choose the nearest number to your answer.
- WARNING: Do not copy answers from your neighbours. <u>They have different questions forms.</u>
- For each question, **<u>put the code in capital letter</u>** of the correct answer, in the following table, beneath the question number:

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
B	C	A	B	D	D	C	B	C	C

11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A	A	D	D	B	B	C	A	B	A

21	**22**	**23**	**24**	**25**
C	A	D	D	B [redacted]

QUESTIONS 1 - 2

From men with age more than 20 years living in Qaseem, we select 200 men. It was found that the average weight of the men was 76 kg.

Q. 1 The variable of interest is:

(A) Age	**(B) weight**	(C) 200 men	(D) 76 kg

Q. 2 The sample size is:

(A) 76	(B) 20	**(C) 200**	(D) 1520

QUESTIONS 3 - 8

Fill in the table given below. Answer the following questions.

Class Interval	Frequency	Cumulative Frequency	Relative Frequency	Cumulative Relative Frequency
5 - 9	8			
10 - 14	15		C	
15 – 19	11	B		D
20 - 24	A	40	0.15	

Q. 3 The value of A is:

(A) 6	(B) 4	(C) 34	(D) 40

Q. 4 The value of B is:

(A) 40	**(B) 34**	(C) 0.85	(D) 0.275

Q. 5 The value of C is:

(A) 23	(B) 0.575	(C) 0.275	**(D) 0.375**

Q. 6 The value of D is:

(A) 0.375	(B) 34	(C) 0.8	**(D) 0.85**

Q. 7 The true class interval for the first class is:

(A) 5 - 9	(B) 5 - 10	**(C) 4.5 – 9.5**	(D) 5.5 – 9.5

Q. 8 The percentage of observations less than 19.5 is:

(A) 34	**(B) 85**	(C) 1	(D) 6

QUESTIONS 9 -14

Temperature (in Faraheniet) recorded at 2 am in London on 8 days randomly chosen in a year were as follows:

40 -21 38 -9 26 -21 -49 44

Q. 9 The average temperature for the sample is:

(A) 248	(B) 1	**(C) 6**	(D) 48

Q. 10 The median temperature for the sample is:

(A) 17	(B) -21	**(C) 8.5**	(D) -8.5

Q. 11 The mode of temperature for the sample is:

(A) -21	(B) 44	(C) 2	(D) -49

Q. 12 The standard deviation for the sample data is:

(A) 35.319	(B) 30.904	(C) 1247.43	(D) 4

Q. 13 The coefficient of variation for the sample is:

(A) 49%	(B) 17%	(C) 4%	**(D) 588.7%**

Q. 14 The range of the sample is:

(A) 4	(B) 8	(C) 40	**(D) 93**

QUESTIONS 15 – 19

Gender	Diabetics (D)	Not Diabetic (D^c)	TOTAL
Male (M)	72	288	360
Female (F)	48	192	240
TOTAL	120	480	600

Consider the information given in the table above. A person is selected randomly from 600 people.

Q. 15 The probability that the person found is male and diabetic is:

(A) 72	**(B) 0.12**	(C) 0.60	(D) 0.67

Q. 16 The probability that the person found is male or diabetic is:

(A) 0.12	**(B) 0.68**	(C) 0.60	(D) 0.97

Q. 17 The probability that the person found is female is:

(A) 0.24	(B) 0.12	**(C) 0.40**	(D) 0.5

Q. 18 Suppose we know the person found is a male, the probability that he is diabetic, is:

(A) 0.2	(B) 0.12	(C) 0.40	(D) 0.68

Q. 19 The events M and D are:

(A) Disjoint	**(B) Independent**	(C) mutually exclusive	(D) Dependent

QUESTIONS 20 - 21

Suppose that 5 % of the people in a population have cancer and 20% of all the people are poor. Suppose that two events (cancer and being poor) are independent. A person is selected at random from the population.

Q. 20 The probability that the person selected is r poor and has a cancer, is:

(A) 0.01	(B) 0.10	(C) 0.24	(D) 0.25

Q. 21 The probability that the person selected is either poor or has a cancer, is:

(A) 0.01	(B) 0.10	**(C) 0.24**	(D) 0.25

QUESTIONS 22-25

It is known that 40% of the population is diabetic. 330 persons who were diabetics went through a test where the test confirmed the disease for 288 persons. Among 270 healthy persons, test showed high sugar level for 22 persons. The information obtained is given in the table below.

Answer the following Questions.

Test	Diabetics (D)	Not Diabetic (D^c)	TOTAL
Positive (T)	288	72	360
Negative ($\bar{T}$)	42	198	240
TOTAL	330	270	600

Q. 22 The sensitivity of the test is:

(A) 0.873	(B) 0.480	(C) 0.733	(D) 0.33

Q. 23 The specificity of the test is:

(A) 0.873	(B) 0.330	(C) 0.48	**(D) 0.733**

Q. 24 The probability of false positive is:

(A) 0.1549	(B) 0.127	(C) 0.713	**(D) 0.267**

Q. 25 The predictive probability positive for the disease is:

(A) 0.686	(B) 0.800	(C) 0.480	(D) 0.873

King Saud University
College of Science
Department of Statistics & Operations Research

STAT 145
Mid-Term I Examination
Second Semester
1431/32

Student Name			
Student Number:		**Section Number:**	
Teacher Name:		**Serial Number:**	

- Mobile Telephones are not allowed in the classrooms
- Time allowed is 1 and 1/2 hour
- Attempt all questions
- Choose the nearest number to your answer
- For each question, put the code of the correct answer in the following table beneath the question number:

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
C	*B*	*B*	*C*	*A*	*A*	*C*	*A*	**C**	*A*

11	12	13	14	15	16	17	18	19	20
D	A	C	A	B	D	C	B	C	C

21	**22**	**23**	**24**
C	B	C	A

Use the following table to answer questions (1 – 4)

No.	Classes	Frequency	Percentage Freq %
1	7.5 – 9.5	1	0.61
2	9.5 – 11.5	1	0.61
3	11.5 – 13.5	x	3.03
4	13.5 – 15.5	17	10.30
5	15.5 – 17.5	49	29.70
6	17.5 – 19.5	60	y
7	19.5 – 21.5	27	16.36
8	21.5 – 23.5	5	3.03
	Total	165	100.00

1) The value of x is:
A) 3 B) 10 C) 5 D) 8

2) The value of y is:
A) 15.75 B) 36.36 C) 12.55 D) 46.32

3) The mid-class(mid -point) of the second class is:
A) 9.5 B) 10.5 C) 9 D) 8.5

4) The percentage of measurements that are less than 15.5 is:
A) 10.30 % B) 36.36 % C) 14.55 % D) 1.21 %

Use the following information to answer questions (5 – 8)

	Exhibit Symptom D	Does not Exhibit Symptom $\overline{D}$	Total
Positive T	495	12	507
Negative $\overline{T}$	25	868	893
Total	520	880	1400

5) The sensitivity of the symptom is
A) 0.952 B) 0.495 C) 0.976 D) 0.356

6) The specificity of the symptom is
A) 0.986 B) 0.148 C) 0.972 D) 0.625

7) Suppose it is known that the rate of the disease in the general population is 0.05. the predictive value positive of the symptom is
A) 0.05 B) 0.491 C) 0.786 D) 0.986

8) The predictive value negative of the symptom is
A) 0.999 B) 0.954 C) 0.509 D) 0.052

Use the following table to answer questions (9 – 12)

A random sample of 1000 mothers from some health centre was investigated. The following table cross-tabulates the counts of mothers in the classifications of whether the baby was premature or not and whether the mother admitted to smoking during pregnancy (SMOKE) or not.

	Not- Premature	Premature	Total
Smoke	220	86	306
Not-Smoke	580	114	694
Total	800	200	1000

9) The probability that a mother selected at random in this sample admitted to smoking is

A) 0.220 B) 0.86 C) 0.306 D) 0.275

10) The probability that a mother selected at random in this sample had a premature baby is

A) 0.2 B) 0.86 C) 0.43 D)0.281

11) The probability that a mother in this sample had a premature baby given that the mother admit to smoking is

A) 0.86 B) 0.43 C) 0.200 D) 0.281

12) The probability that a mother selected at random in this sample had a premature baby or that the mother did not admit to smoking is

A) 0.780 B) 0.200 C) 0.694 D) 0.894

Use the following data to answer questions (13 – 18)

The data below presents the heart rate of seven rat pups from the experiment involving the carotid artery.

500 570 560 570 450 560 570

13) The mean of this data is:

A) 560 B) 500 C) 540 D) 570

14) The median in this data is:

A) 560 B) 500 C) 540 D) 570

15) The mode of this data is:

A) 550 B) 570 C) 70 D) 120

16) The range of this data is:

A) 550 B) 570 C) 70 D) 120

17) The variance of this data is:

A) 1250 B) 2500 C) 2200 D) 1890

18) The coefficient of variation of this data is:

A) 11.51 % B) 8.69 % C) 4.07 % D) 4.67 %

----

19) A false positive indicates

A) Given the subject has the disease, the test result is positive ($T \mid D$)

B) Given the subject has the disease, the test result is negative ($\bar{T} \mid D$)

C) Given the subject does not have the disease, the test result is positive ($T \mid \bar{D}$)

D) Given the subject does not have the disease, the test result is negative ($\bar{T} \mid \bar{D}$)

----

20) If A and B are two mutually exclusive events(disjoint) then

A) $P(A \cap B) = P(A)P(B)$ B) $P(A|B) = P(A)$

C) $P(A \cup B) = P(A) + P(B)$ D) $P(A \cup B) = 1$

----

21) If P(A)= 0.2, P(B)= 0.5 and P(A∩ B) = 0.1 then P(A | B) =

A) 0.5 B) 0.4 C) 0.2 D) 1.0

----

22) If the probability of left-handedness in a certain group is 0.07, the probability of right-handedness (assuming no ambidexterity) is

A) 0.07 B) 0.93 C) 0.00 D) 1.00

----

23) The probability that a person selected from a population will have the classic symptom of a certain disease is 0.2, and the probability that a person selected at random has the disease is 0.23. The probability that a person has the symptom and also has the disease is 0.18. Given a person selected at random from this population does not have the symptom the probability that the person has the disease is

A) 0.0460 B) 0.0360 C) 0.0625 D) 0.0420

----

24) Consider the following table for age and smoking habit of 200 teenagers.

Age group		A None Smoker	B Moderate Smoker	C Heavy Smoker
D	10-12	0	40	60
E	15-18	10	40	50

From the above table, we can say that the event A and D are

A) mutually exclusive(disjoint) B) $A^C = D$ C) independent D) $A = D^C$

Department of Statistics & Operations Research
College of Science, King Saud University

STAT 145
Final Examination
Second Semester1431 – 1432 H

			اسم الطالب
	رقم التحضير		الرقم الجامعي
	اسم الدكتور		رقم الشعبة

- Mobile Telephones are not allowed in the classrooms.
- Time allowed is **3 Hours**.
- Answer all questions.
- Choose the nearest number to your answer.
- For each question, put the code (**Capital Letters**) of the correct answer in the following table beneath the question number. **Do not use pencil or red pens**.
-

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	**D**	**A**	**C**	**A**	**C**	**B**	**C**	**B**	**D**
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
B	**D**	**B**	**A**	**B**	**A**	**A**	**B**	**C**	**A**
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
C	**D**	**B**	**C**	**A**	**B**	**B**	**A**	**D**	**D**
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
A	**C**	**C**	**B**	**A**	**D**	**D**	**C**	**B**	**A**
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
B	**C**	**C**	**B**	**B**	**B**	**B**	**B**	**C**	**A**

Term Marks	Final Exam. Marks	Total Marks

»»

Following are the weights (in kg) for a sample of 6 children.

13, 20, 18, 12, 15, and 12.

(1) The mean of the data is:

A)	12	B)	<u>15</u>	C)	10	D)	18

(2) The median of the data is:

A)	17	B)	12	C)	10	D)	<u>14</u>

(3) The mode of the data is:

A)	<u>12</u>	B)	20	C)	15	D)	2

(4) The variance of the data is:

A)	3.347	B)	3.055	C)	<u>11.200</u>	D)	9.333

(5) The coefficient of variation (C.V.) of the data is:

A)	<u>22.3%</u>	B)	17.4%	C)	74.7%	D)	62.22%

»»

Temperatures recorded at 2 pm for 5 days of a year, for a city are:

7, 4, 0, -5, and 40.

(6) The range of temperatures is:

A)	33	B)	40	C)	<u>45</u>	D)	5

(7) The most suitable measure of centre for the data is:

A)	Mean	B)	<u>Median</u>	C)	Mode	D)	Range

»»

Let A and B denote two events defined on the same sample space with P(A) = 0.6, P(B) = 0.4, and P(A⋃B) = 0.74, then:

(8) The events A and B are:

A)	independent	B)	mutually exclusive	C)	<u>dependent</u>	D)	impossible

(9) The $P(\bar{A} \cup \bar{B})$is:

A)	0.18	B)	<u>0.26</u>	C)	0.50	D)	1.00

»»

Consider the following cumulative frequency distribution table for the ages of all workers in a certain factory.

Age	**Cumulative frequency**
26 - 35	10
36 - 45	40
46 - 55	50

(10) Percentage of workers in the age group 36 - 45 is:

A)	40%	B)	80%	C)	30%	D)	<u>60%</u>

(11) Number of workers having age 36 or more is:

A)	90	B)	<u>40</u>	C)	10	D)	50

(12) The true class limits for the first class are:

A)	26 - 35	B)	21.5 - 35.5	C)	25.5 - 34.5	D)	<u>25.5 - 35.5</u>

»»

Let A and B be two independent events. Suppose that P(A) =0.6 and P(B) =0.3 then

(13) $P(\bar{A} \cap B)$ equals:

A)	0.08	B)	<u>0.12</u>	C)	0.20	D)	0.42

(14) $P(A \cup B)$ equals:

A)	<u>0.72</u>	B)	0.90	C)	0.10	D)	0.7

»»

Suppose that a town has 20% of men known to have a certain disease. A certain medical test is applied to randomly selected 500 men. The following data is obtained.

	Disease		
Test	**Present**	**Absent**	**Total**
Positive	**82**	**80**	**162**
Negative	**38**	**300**	**338**
Total	**120**	**380**	**500**

Let an individual be selected at random from the sample.

(15) The probability that the selected person has the disease is:

A)	0.20	B)	<u>0.24</u>	C)	0.68	D)	0.32

(16) The probability that the test gives a false negative result is:

A)	<u>0.32</u>	B)	0.68	C)	0.21	D)	0.79

(17) The sensitivity of the test is:

A)	<u>0.68</u>	B)	0.16	C)	0.51	D)	0.79

(18) Suppose that 20% of men in the town have the disease, the predictive probability negative for the test is:

A)	0.37	B)	<u>0.62</u>	C)	0.09	D)	0.89

»»

In a large population of people, 34% have blood type A+. If we randomly choose 8 persons from this population and let X = the number in the 8 chosen that with blood type A+.

(19) The values of the parameters of the distribution are:

A)	3 and 0.34	B)	8,and 0.66	C)	8 and 0.34	D)	8 and 34

(20) The probability that there is exactly one person with blood type A+:

A)	0.1484	B)	0.0028	C)	0.3400	D)	0.0185

(21) The probability that there is at least one person with blood type A+ :

A)	0.1484	B)	0.1844	C)	0.9640	D)	0.0360

»»

The number of serious surgical operations that are performed in a hospital during a day follows a Poisson distribution with an average of 5 persons per day, then:

(22) The probability that no operations is performed in the next day is:

A)	0.99996	B)	0.0067	C)	0.54210	D)	0.08972

(23) The probability that 5 operations are performed in the next day is:

A)	0.2145	B)	0.8521	C)	0.175	D)	0.5124

(24) The average number of operations that are performed in two days is:

A)	20	B)	10	C)	5	D)	30

»»

In a population of people, X = the body mass index (in kg/m^2) is normally distributed with mean μ = 25 and standard deviation σ = 2. For a randomly chosen person,

(25) $P(24 < X < 26) =$

A)	0.6915	B)	0.3830	C)	0.2085	D)	1

(26) $P(X > 21) =$

A)	0.9772	B)	0.0228	C)	1	D)	

(27) $P(X = 21) =$

A)	0.9772	B)	0.0228	C)	1	D)	0

(28) Find the value of k such that $P(X > k) = 0.2578$.

A)	0.257	B)	25	C)	- 0.65	D)	26.3

»»

A sample of size 100 is taken from a population having a proportion $p_1 = 0.8$. Another independent sample of size 400 is taken from a population having a proportion $p_2 = 0.5$.

(29) The sampling distribution for the difference in sample proportions has a mean equals:

A)	0.3	B)	1.3	C)	0	D)	0.8

(30) The sampling distribution for the difference in sample proportions has a standard error equals:

A)	0.015	B)	0.0022	C)	0.047	D)	0.1239

(31) $P(\hat{p}_1 - \hat{p}_2 < 0.2)$ = :

A)	0.4423	B)	0.993	C)	0.0166	D)	0.2415

»»

Suppose it has been established that for a certain type of client the average length of a home visit by a public health nurse is 45 minutes with a standard deviation of 15 minutes, and that for a second type of client the average home visit is 30 minutes with a standard deviation of 20 minutes. If a nurse randomly visits 35 clients from the first population and 40 from the second population, then

(32) The mean of the difference between two sample means is:

A)	5	B)	15	C)	20	D)	35

(33) The standard deviation of the difference between two sample means is:

A)	4.0532	B)	16.4286	C)	8.2143	D)	0.5241

(34) The probability that the average length of home visit will differ between the two groups by 20 or more is:

A)	0.8907	B)	0.4215	C)	0.5	D)	0.1093

»»

A researcher wishes to determine if vitamin E supplements could increase cognitive ability among elderly women. In 1999 the researcher recruits a sample of elderly women age 75-80. At the time of the enrollment into the study, the women were randomized to either take Vitamin E, or a placebo for six months. At the end of the six month period, the women were given a cognition test. Higher scores on this test indicate better cognition. The mean of the test scores of 81 women who took vitamin E supplements was $\overline{X}_1$ = 27, while the mean of the test scores of the 90 women who took placebo supplements was $\overline{X}_2$ = 24 Assuming the two populations follow approximately two different normal distributions with standard deviations, σ_1 = 6.9 and , σ_2 = 6.2, respectively.

(35) The point estimate for the difference between the two population means (μ_1-μ_2):

A)	27	B)	24	C)	6.2	D)	3

(36) The standard error for the difference between the two sample means ($\overline{X}_1 - \overline{X}_2$):

A)	6.9	B)	6.2	C)	1.007	D)	3

(37) A lower limit of a 95% C.I. for the difference between the two population means (μ_1-μ_2):

A)	1.0263	B)	4.9745	C)	5.9120	D)	1.2354

»»

Six healthy three year old female sheep were injected with the antibiotic Gentamicin, at a dosage of 10 mg/kg body weight. Their blood serum concentrations (mg/ml) of Gentamicin after injection were 33; 26; 34; 31; 23; 25, the summary statistics for these data are

n	mean	Standard deviation	SE(mean)
6	28.67	4.59	1.87

Assuming the data follows approximately a normal distribution,

(38) The standard error of the sample mean is equal to:

A)	0.25	B)	1.87	C)	4.59	D)	28.67

(39) At the 90%, the ratability coefficient is equal to:

A)	2.33	B)	2.015	C)	3.215	D)	1.96

(40) The 90% confidence interval for the population mean score on this test is:

A)	(27.412, 30.145)	B)	(24.48, 29.10)	C)	(24.902, 32.438)	D)	(32.48, 39.55)

(41) The test statistic for testing the hypotheses $H_0: \mu = 30 \ vs \ H_1: \mu < 30$ is equal to:

A)	-2.2587	B)	2.5812	C)	-0.7112	D)	3.3412

(42) At the 5% significance level the critical region is :

A)	(-∞, -2.015)	B)	(-2.015, 2.015)	C)	(2.015, ∞)	D)	(2.58, ∞)

(43) At the 5% significance level we are able to :

A)	Reject H_0	B)	Not to reject H_0	C)	Decision is not possible

»»

A biostatistician , found that among 2000 boys ages 7 to 12 years. 400 were overweight. On the basis of this study:

(44) The standard error of the sample proportion of the overweight boys ages 7 to12 years is:

A)	0.0500	B)	0.0089	C)	0.6587	D)	0.0221

(45) The 99% upper confidence limit for the population proportion of the overweight boys ages 7 to12 years is:

A)	0.5000	B)	0.223	C)	0.6587	D)	0.0221

(46) The test statistic for testing the hypotheses the proportion of boys ages 7 to 12 year does not equal 18 is:

A)	-2.2587	B)	2.33	C)	-0.7112	D)	3.3412

(47) At the 5% significance level, can we conclude that more than 18% of boys ages 7 to 12 years are overweight:

A)	Yes	B)	No	C)	Decision is not possible

»»

A sample of 25 freshman nursing students made a mean score of 77.on a test designed to measure the attitude toward the dying patient. The sample standard deviation was 10. Assuming the data comes from a normal population,

(48) The statistical hypothesis for testing the hypothesis that the mean score is different than 80 is:

A)	$H_0: \mu = 80 \;\; vs \;\; H_1: \mu \neq 80$	B)	$H_0: \mu = 80 \;\; vs \;\; H_1: \mu < 80$
C)	$H_0: \mu = 80 \; vs \;\; H_1: \mu > 80$	D)	$H_0: \mu = 77 \;\; vs \;\; H_1: \mu < 77$

(49) The test statistic for these statistical hypothesis is:

A)	-1.500	B)	-2.025	C)	3.258	D)	0

(50) At the 5% significance level we are able to :

A)	Reject H_0	B)	Not to reject H_0	C)	Decision is not possible

بسم الله الرحمن الرحيم

Department of Statistics
& Operations Research
College of Science, King Saud University

***STAT 145** Final Exam*
First Semester 1431– 1432 H

اسم الطالب			
الرقم الجامعي		**رقم التحضير**	
رقم الشعبة		**اسم الدكتور**	

- Mobile phones are not allowed in the classrooms.
- Time allowed is 180 minutes
- Answer all questions.
- Choose the nearest number to your answer.
- WARNING: Do not copy answers from your neighbors. They have different questions forms.
- For each question, put the code of the correct answer in the following table beneath the question number:

1	2	3	4	5	6	7	8	9	10
B	**C**	A	A	B	C	C 0.125	B	B	C

11	12	13	14	15	16	17	18	19	20
D	C	C	D	D	B	B	A	C	A

21	22	23	24	25	26	27	28	29	30
C	D	A	D	A	A	B	A	B	D

31	32	33	34	35	36	37	38	39	40
A	A	C	C	D	B	A	C	D	D

41	42	43	44	45
A	B	A	D	B

- **Let X be the number of serious cases accepted in an emergency Hospital section in one hour. The probability distribution of X is as follows:**

x	**0**	**1**	**2**	**3**
P(X=x)	**0.3**	**0.5**	**0.15**	**k**

1. The value of k is:

(A) 0	<u>(B) 0.05</u>	(C) 0.5	(D) 1

2. The probability that $P(X \leq 1)$ is:

(A) 0.2	(B) 0. 5	<u>(C) 0.8</u>	(D) 2/3

--- ---- ---- ------------------ ------------------- --- ---- -- -----

- **You are given the following Data: 9.5, 9, 8, 7, 8.5, and 10**

3. The best measure of center is:

<u>(A) the mean</u>	(B) the median	(C) the variance	(D) the mode

4. The mean of the data is:

<u>(A) 8.67</u>	(B) 8	(C) 52	(D) 6

5. The median of the data is:

(A) 8.67	<u>(B) 8.75</u>	(C) 7.5	(D) no median

6. The variance of the data is:

(A) 1.08	(B) 0.97	<u>(C) 1.17</u>	(D) 0.99

7. The coefficient of variation for the data is:

(A) 3.4	(B) 7.41	<u>(C) 0.135</u>	(D) 1.17

---- ---- ---- ------------------ -------------------- --- ---- -- -----

- **The following table gives the classification of a group of 350 patients according to sex (M or F) and whether or not a person has a Coronary heart disease (C):**

Disease	M	F	**Total**
C	150	80	**230**
$\overline{C}$	50	70	**120**
Total	**200**	**150**	**350**

8. The event $\overline{C}$ and F are :

(A)Independent	<u>(B) Dependent</u>	(C) Disjoint	(D) Mutually Exclusive

9. The probability of either $\overline{C}$ or F is:

(A) 0.13	(B) 0.57	(C) 0.77	(D) 0.20

- -

➢ **The following table shows the results of a screening test evaluation in which a random sample of 800 subjects with disease and an independent sample of 1300 subjects without the disease participated:**

Test results	**Present (D)**	**Absence ($\overline{D}$)**	**Total**
Positive (T)	710	50	**760**
Negative ($\overline{T}$)	90	1250	**1340**
Total	**800**	**1300**	**2100**

10. The probability of false positive result is:

(A) 25/26	(B) 71/80	(C) 1/26	(D) 9/80

11. The sensitivity of the test is:

(A) 1/26	(B) 9/80	(C) 25/26	(D) 71/80

12. The specificity of the test is:

(A) 1/26	(B) 9/80	(C) 25/26	(D) 71/80

If the true probability of the disease is 0.1 then:

13. The predictive value negative of the test is:

(A) 0.85	(B) 0.72	(C) 0.99	(D) 0.90

- -

➢ **A clinic used to receive some cancer patients with mean 2.5 cases every week. Suppose that the number of cases received every week follow Poisson distribution, then**

14. The probability that the clinic will receive next week more than one cancer patient is**:**

(A) 0.287	(B) 0.205	(C) 0.795	(D) 0.713

15. The probability that the clinic will receive next month (Assume one month = 4 weeks) exactly 5 cancer patients is:

(A) 0.050	(B) 0.7356	(C) 0.094	(D) 0.038

16. The average number of cancer patients received in one month (Assume one month = 4 weeks) is:

(A) 2.5	(B) 10	(C) 5	(D) 30

- -

➢ **Suppose that a group of 10 patients visit a certain Diabetic clinic. If it is known that 25% of persons visiting the clinic are Diabetic, then:**

17. The probability that there will be, in the group, three Diabetic patients is:

(A) 0.30	(B) 0.25	(C) 0.75	(D) 0.7

18. The probability that there will be at least one Diabetic patient is:

(A) 0.944	(B) 0.056	(C) 0.1	(D) 0.9

19. The expected number of Diabetic patients in the group is:

(A) 7	(B) 5	(C) 2.5	(D)**)** 3

20. The Variance of the number of Diabetic patients in the group is:

(A) 1.675	(B) 2.5	(C) 4	(D) 6

- -

➢ **A random variable has a normal distribution with mean $\mu = 50$ and standard deviation $\sigma = 5.2$. The probability that the random variable will take a value:**

21. less than 55.2 is:

(A) 0.2649	(B) 0.7538	(C) **0.8413**	(D) 0.8909

22. greater than 60.3 is:

(A) 0.1	(B) 0.5	(C) 0.4	(D) **0.02**

- -

➢ **The heights of a random sample of 50 college students showed a mean of 174.5 centimeters and a standard deviation of 6.9 centimeters**.

23. The lower bound of 98 % confidence interval for the mean height of all college students is:

(A) **172.23**	(B) 174.5	(C) 176.77	(D) 167.60

24. The upper bound of 98 % confidence interval for the mean height of all college students is:

(A) 0.5524	(B) 167.60	(C) 172.23	(D) **176.77**

- - - - - - - - - - - - -- - - - - - - - - - - - - - - - -- - - - - - - - - - - - - - - - -- - - - - - - -- -- -- - - - -

➢ **A new-rocket–launching system is being considered for development of small, short-range rockets. The existing system has P = 0.8 as the probability of a successful launch. A sample of 40 experimental launches is made with the new system out of which 34 are successful. Let *P* be the proportion of successful launches under the new system.**

25. A lower bound of 95 % confidence interval for *P*, is:

(A) **0.739**	(B) 0.800	(C) 0.761	(D) 0.250

26. An upper bound of 95 % confidence interval for *P*, is:

(A) **0.961**	(B) 0.750	(C) 0.009	(D) 0.893

27. On testing that whether the new system is better, the test statistic value is:

(A) 1.960	(B) **0.79**1	(C) 1.645	(D) O.W

- - - - - - - - - - - - -- - - - - - - - - - - - - - - - -- - - - - - - - - - - - - - - - -- - - - - - - -- -- -- - - - -

➢ **A random sample of size n_1 = 25, taken from a normal population with a standard deviation σ_1 = 5.2, has a mean $\bar{x}_1$ = 81. A second random sample of size n_2 =36, taken from a different normal population with standard deviation σ_2 =3.4, has a mean $\bar{x}_2$ = 76. On testing the hypothesis, at the 0.01 level of significance, that $\mu_1 = \mu_2$ against the alternative $\mu_1 \neq \mu_2$, consider the following questions**:

28. The probability distribution used for performing the test is:

(A) **N(0, 1)**	(B) Normal	(C) t-distributior	(D) O.W

29. The test is:

(A) one-sided to left	(B**) two-sided**	(C) one-sided to right	(D) O.W

30. The critical value (the reliability coefficient) for that test is:

(A) 1.56	(B) 2.58	(C) 1.96	(D**) 2.575**

31. The value of the test statistic is:

(A) **4.22**	(B) 2.05	(C) 2.24	(D) 22.40

32. The decision is:

(A) **reject H_0**	(B) reject H_1	(C) accept H_0 and H_1	(D) O.W

- **Assume that the mean life of a machine is 6 years with a standard deviation of 1 year. Suppose that the life of such machines follows approximately a normal distribution. If a random sample of 4 is selected from these machines, then:**

33. The probability distribution of a sample mean is called a :

(A)Standard error	(B)Random sampling	(C)**Sampling distribution**	(D) Standard deviation

34. The sample mean $\bar{x}$ has a standard deviation equals to:

(A) 0.79	(B) 0.70	(C) **0.50**	(D) 0.25

35. If $P(\overline{X} > b) = 0.1492$, then the value of b is**:**

(A) 0.85	(B) .20	(C) 1.04	(D) **6.52**

- -

- **Suppose that 7 % of the pieces from a production process A are defective while that proportion of defective for another production process B is 5 %. A random sample of size 400 pieces is taken from the production process A while the sample size taken from the production process B is 300 pieces. If $\hat{P}_1$ and $\hat{P}_2$ be the proportions of defective pieces in the two samples, respectively, then:**

36. The sampling distribution of $\hat{P}_1 - \hat{P}_2$ is:

(A) N(0, 1)	(B) **Normal**	(C) T	(D) unknown

37. The value of the standard error of the difference $(\hat{P}_1 - \hat{P}_2)$ is:

(A) **0.02**	(B) 0.10	(C) 0	(D) 0.22

- **A random sample of 35 students in a certain university resulted in the sample proportion of smokers $\hat{p}$ = 0.15. Then:**

38. The point estimate of p is**:**

(A) 0.35	(B) 0.85	(C) **0.15**	(D) 0.80

39. The standard deviation of $\hat{p}$ is:

(A) 0.3214	(B) .0036	(C) 0.1275	(D) **0.0604**

- **The following are the average weekly losses of worker-hours due to accidents in 10 industrial plants before and after a certain safety program was put into operation:**

45 and 36	**73 and 60**	**46 and 44**	**124 and 119**	**33 and 35,**
57 and 51	**83 and 77**	**34 and 29**	**26 and 24**	**17 and 11**

On testing whether the safety program is effective, consider the following questions using the 0.05 level of significance: (Hint: $\bar{x}_d$ = 5.2 and s_d = 4.08)

40. The computed value of the test statistic is:

(A) 4.08	(B) 5.2	(C) 1.383	(D) **4.03**

41. The critical value of the test is:

(A) **1.833**	(B) 1.813	(C) 2.262	(D) 2.821

42. The decision is:

(A) reject H_1	(B) **reject H_0**	(C) accept H_0 and H_1	(D) O.W

- **One production process yielded 28 defective pieces in a random sample of size 400 while another yielded 15 defective pieces in a random sample of size 300. On testing the null hypothesis $P_1 = P_2$ (that the two process yield equal proportions of defectives) against alternative hypothesis $P_1 \neq P_2$, consider the following questions using the 0.05 level of significance**:

43. The test statistic value is:

(A) **1.10**	(B) 1.96	(C) 0.061	(D) 2.58

44. The value from the table is:

(A) 1.65	(B) 2.33	(C) 2.58	(D) **1.96**

45. The decision is:

(A) accept H_1	(B) **accept H_0**	(C) reject H_0 and H_1	(D) O.W

Department of Statistics
& Operations Research
College of Science, King Saud University

STAT 145 - Final Exam Semester I - 1432- 1433 H

Student Name:			
Student Number:		**Section Number:**	
Teacher Name:		**Attendance Number:**	

- Mobile Telephones are not allowed in the classrooms.
- Time allowed is 3 hours.
- Answer all questions.
- Choose the nearest number to your answer.
- For each question, **use pen to put the code in capital letter** of the correct answer, in the following table, beneath the question number:

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
C	**B**	**A**	**B**	**D**	**C**	**B**	**D**	**C**	**B**

11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
B	**C**	**D**	**B**	**D**	**B**	**A**	**C**	**B**	**D**

21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
B	**C**	**D**	**C**	**C**	**C**	**D**	**D**	**A**	**A**

31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
A	**C**	**B**	**A**	**D**	**A**	**A**	**B**	**D**	**A**

41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
A	**C**	**D**	**B**	**A**	**B**	**C**	**A**	**D**	**D**

QUESTION 1-4:

The probability that a certain X-ray machine produces a defective X-ray is 0.20. Six X-rays are selected at random from a number of X-rays produced by the X-ray machine. Let Y denote the number of defective X-rays from the sample.

(1) P(Y≤1) is:

(A)	0.8011	(B)	0.9011	(C)	**0.6553**	(D)	0.2621

(2) P(Y>1) is:

(A)	0.8011	(B)	**0.3447**	(C)	0.6553	(D)	0.3932

(3) The expected number of the defective X-rays is:

(A)	**1.2**	(B)	1	(C)	2	(D)	6

(4) The standard deviation of the defective X-rays is:

(A)	3	(B)	**0.98**	(C)	0.2	(D)	0.96

QUESTION 5-7:

Suppose that the human breaths per minute X for adult are normally distributed with mean 16 and standard derivation 4. If an adult is chosen at random, the probability that X will be

(5) less than 20 is:

(A)	0.2547	(B)	0.1587	(C)	0.2488	(D)	**0.8413**

(6) at least 18 is:

(A)	0.2547	(B)	0.987	(C)	**0.3085**	(D)	0.6915

(7) between 12 and 17 is:

(A)	0.1600	(B)	**0.4400**	(C)	0.5000	(D)	0.5900

QUESTION 8-11:

Suppose that the mean number X of cases visiting the emergency clinic (E-clinic) at KKUH is four cases per hour. By assuming Poisson distribution, then

(8) P(X >1) is:

(A)	0.2149	(B)	0.0916	(C)	0.2158	(D)	**0.9084**

(9) $P(1 \leq X < 3)$ is:

(A)	0.587	(B)	0.2789	(C)	**0.2198**	(D)	0.7802

(10) The standard deviation of the number of cases visiting the E-clinic is:

(A)	1.521	(B)	**2**	(C)	3	(D)	4

(11) The expected number of cases visiting the E-clinic in 6 hours is:

(A)	4	(B)	**24**	(C)	10	(D)	12

QUESTION 12-15:

The following table classified 500 persons according to Thrombosis and smoking habit.

	Smoking Group	
	Smoking(S)	Non-smoking(S^c)
Thrombosis (T)	5	4
Non thrombosis (T^c)	145	346

(12) The probability that a patient selected randomly has a thrombosis and is smoker, is:

(A)	0.05	(B)	0.10	(C)	**0.01**	(D)	0.50

(13) The probability that the patient has a thrombosis is:

(A)	0.500	(B)	0.444	(C)	0.556	(D)	**0.018**

(14) The probability that the patient has a thrombosis given that he does not smoke is:

(A)	0.0080	(B)	**0.0114**	(C)	0.7000	(D)	0.692

(15) The probability that a patient selected randomly has a thrombosis or is smoker is:

(A)	0.318	(B)	0.108	(C)	0.103	(D)	**0.308**

QUESTION 16 -18:

The following table shows the results of a screening test evaluation in which a random sample of 325 subjects with the disease and an independent random sample of 600 subjects without the disease participated:

Test results	Disease	
	Present	Absent
Positive	245	35
Negative	80	565

(16) The specificity value of the test is:

(A)	0.0619	(B)	**0.9417**	(C)	0.6108	(D)	0.0583

(17) The sensitivity value of the test is:

(A)	**0.7538**	(B)	0.8750	(C)	0.4083	(D)	0.2462

(18) Assuming the rate of the disease in the general population is 0.001, the predictive value positive of the test is:

(A)	0.9282	(B)	0.9872	(C)	**0.0128**	(D)	0.0252

QUESTION 19 - 25:

Consider the following data set: 10, 7, 7, 10, 7, 6, 5, 6, 5
Then,

(19) The mode value is:

(A)	10	(B)	**7**	(C)	6	(D)	5

(20) The median value is:

(A)	9	(B)	6	(C)	5	(D)	**7**

(21) The range value is:

(A)	4	(B)	**5**	(C)	10	(D)	9

(22) The standard deviation value is:

(A)	1.928	(B)	2.987	(C)	**1.871**	(D)	3.500

(23) The coefficient of variation value is:

(A)	2 %	(B)	374 %	(C)	50%	(D)	**27 %**

(24) The sample size is:

(A)	4	(B)	7	(C)	**9**	(D)	10

(25) The mean value is:

(A)	6	(B)	6.5	(C)	**7**	(D)	7.5

QUESTION 26 - 30:

A simple random sample of size 10 is drawn from a normal population. The sample resulted in $\bar{x} = 5.2$ and S = 4.08.

(26) The point estimate of the population mean is:

(A)	10	(B)	4.08	(C)	**5.2**	(D)	7.5

(27) The standard deviation of the point estimate of the population mean is:

(A)	10	(B)	4.08	(C)	5.2	(D)	**1.29**

(28) The computed value of the test statistic for testing H_0: $\mu = 3$ against H_1: $\mu > 3$ is:

(A) 4.08	(B) 1.96	(C) 1.29	(D) **1.71**

(29) Suppose $\alpha = 0.05$, then the critical value of the test is:

(A) **1.833**	(B) 1.96	(C) 2.262	(D) 1.645

(30) The decision is:

(A) **accept H_0**	(B) reject H_0	(C) accept H_0 and H_1	(D) rejectH_0 and H_1

QUESTION 31:
Suppose that a large sample of size n is taken from a non-normal population with mean μ and variance σ^2.

(31) The distribution of the sample mean $\bar{x}$ will be:

(A) **Normal with mean μ and variance σ^2/n**	(B) Normal with mean μ and variance σ^2	**(C)** Standard normal

QUESTIONS 32 - 34:

In a simple random sample of size 36 drawn from a population with a mean of 100 and a standard deviation of 36,

(32) the probability that the sample mean will be less than 91 is:

(A) 0.1549	(B) 0.0753	**(C) 0.0668**	(D) 0.0875

(33) the probability that the sample mean will be more than 98 is:

(A) 0.5468	**(B) 0.6293**	(C) 0.8527	(D) 0.7169

(34) the probability that the sample mean will be between 95 and 105 is:

(A) 0.5934	(B) 0.6174	(C) 0.8432	(D) 0.7647

QUESTIONS 35 - 37

In a study on obesity, a sample of 950 adult Saudi women in the Western Region seeking care at primary health centers was taken. It was found that 611 of these were obese. We wish to construct a 99 % confidence interval for the true proportion of adult Saudi women in the Western Region seeking care at primary health centers who are obese.

(35) The standard error estimate of sample proportion is:

(A) 2.58	(B) 0.480	(C) 0.230	**(D) 0.016**

(36) The 99 % confidence interval for the true proportion is:

(A) **0.643 ± 0.04**	(B) 0.643 ± 0.031	**(C)** 0.643 ± 0.016	(D) 0.643 ± 0.026

(37) The width of the 99 % confidence interval for the true proportion is:

(A) **0.082**	(B) 0.031	**(C)** 0.041	(D) 0.643

QUESTIONS 38 - 41:

A random sample of size n_1 = 25, taken from a normal population with a standard deviation σ_1 = 5.2, has a mean $\bar{x}_1$ = 81. A second random sample of size n_2 =36, taken from a different normal population with standard deviation σ_2 =3.4, has a mean $\bar{x}_2$ = 76. On testing the hypothesis, at the 0.01 level of significance, that $\mu_1 = \mu_2$ against the alternative $\mu_1 \neq \mu_2$, consider the following questions:

(38) The test is:

(A) one-sided to left	(B**) two-sided**	(C) one-sided to right	(D) O.W

(39) The critical value (the reliability coefficient) for that test is:

(A) 1.56	(B) 1.58	(C) 1.96	(D**) 2.575**

(40) The value of the test statistic is:

(A) **4.22**	(B) 2.05	(C) 2.24	(D) 22.40

(41) The decision is:

(A) **reject H_0**	(B) reject H_1	(C) accept H_0 and H_1	(D) O.W

QUESTIONS 42 - 46:

The Blood glucose level of patients who attend Clinic A and Clinic B are normally distributed with means μ_A, μ_B and standard deviations $\sigma_A = 9$, $\sigma_B = 6$. Two samples of sizes $n_A = 9$, $n_B = 16$ patients have given $\overline{X}_A = 100$, $\overline{X}_B = 95$ then:

(42) The upper limit of 90% Confidence Interval for $\mu_A - \mu_B$ is

(A) 6.6	(B) 11.6	**(C) 10.5**	(D) 5.6

(43) The lower limit of 90% Confidence Interval for μ_A is

(A) 0.86	(B) 90.05	(C) 104.935	**(D) 95.065**

Suppose we want to test for the Blood glucose level of patients described above,
$H_0 : \mu_A = \mu_B$ *against* $H_A : \mu_A \neq \mu_B$ with $\alpha = 0.1$ then:

(44) The suitable test statistic is:

(A) z = -1.111	**(B) z =1.491**	(C) t= -1.043	**(D)** z =3.5

(45) The non rejection (acceptance) region of H_0 is equal to:

(**A) (-1.65, 1.65)**	(B) (-1.96, 1.96)	(C) ($-\infty$, -1.96)	(D) ($-\infty$, -1.65)

(46) The decision is:

(A) Reject H_0	**(B)Don't reject** H_0	(C) Decision is not possible

QUESTIONS 47 - 48:

Suppose that P_A, P_B are proportions of patients who attend Clinic A and Clinic B who have low blood glucose level. Two samples of sizes $n_A = 100$, $n_B = 122$ patients have given the sample proportions $\hat{p}_A = 0.15$, $\hat{p}_B = 0.11$.

(47) The upper limit of the 95% Confidence Interval for $P_A - P_B$ is

(A) 95	(B) 0.04	**(C) 0.129**	(D) 0.115

(48) To test $H_0 : P_A = 0.17$; $H_A : P_A \neq 0.17$, the value of the test statistic is:

(A) **z = - 0.532**	(B) z =5.6	(C) t = -1.06	**(** D) z =3.5

QUESTIONS 49 - 50:

A simple random sample of n = 6 from a normally distributed population gave the observations:
0.90, 0.97, 1.03, 1.10, 1.04, 1.00.
For the above data, the mean is 1.007 and the standard deviation is 0.068.

(49) A 95 percent confidence interval for the population mean is:

(A)(1.123, 1.354)	(B) (0.939,1.075)	(C) (0.753,.895)	**(D) (0.936, 1.078)**

(50) The reliability factor for a confidence interval based on 99% confidence level and sample size of 8 and when population variance is not known, is:

(A) 3.3554	(B) 2.998	(C) 1.8946	**(D) 3.4995**