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

STAT 109
Mid Term-II Examination
Second Semester

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

11	12	13	14	15	16	17	18	19	20

21	22	23	24	25

The researchers found that the amount of time children spent in upright position followed a normal distribution with mean of 5.4 hours and standard deviation of 1.3 hours. Find:

1) The probability that a child selected at random spend greater than **5.4** hours in upright position:

(A) 0.99	(B) 0.75	(C) 1.00	(D) 0.50

2) The probability that a child selected at random spend less than 3 hours in upright position:

(A) 0.9332	(B) 0.0691	(C) 0.7286	(D) 0.0322

3) The probability that a child selected at random will spend between 3 and 5 hours is:

(A) 0.8085	(B) 0.6915	(C) 0.324	(D) 0.9332

4) The probability that a child selected at random will spend less than k hours is 0.967 Then the value of k is:

(A) 7.79	(B) 4.5	(C) 5.1	(D) 40

5) In a population of 10,000 children the number of children expect be upright more than 8.5 hours is:

(A) 87	(B) 225	(C) 112	(D) 43

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In a sample of 323 children and adults (68 females and 255 males) assaulted. 31 of females and 53 of males reported aggression. Then

6) The point estimate of the population proportion of males assaulted is:

(A) 0.2078	(B) 0.7149	(C) 0.5436	(D) 0.4559

7) The standard error estimate of the mean for males is

(A) 0.3256	(B) 0.1012	(C) 0.0157	(D) 0.6543

8) the 95% confidence interval for the proportion of all males assaulted is

(A)(0.2495, 0.1361)	(B) (0.1891, 0.2821)	(C)(0.2068, 0.2088)	(D)(0.2088, 0.2068)

9) the point estimate for the difference between the proportions of females and males assaulted in the two sampled populations is

(A) 0.5344	(B) 0.7345	(C) 0.2481	(D) 0.4006

10) The standard error estimate of the difference between population proportions is

(A) 0.3256	(B) 0.0012	(C) 0.0655	(D) 0.6543

11) the 95 % confident interval for the difference between the proportions of females and males assaulted them in the two sampled populations is

(A) (0.120,0.377)	(B) (0.319, 0.477)	(C)(0.023, 0.398)	(D)(0.521, 1.034)

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The average level of some enzyme for a sample of 10 individuals, was found to be 22. Assume population follow a normal distribution variance 45. Then

12) The100 (1-α) percent confidence interval for the population average μ is expressed as

(A) $\bar{x} \pm z_{(1-\alpha/2)}\sigma/\sqrt{n}$	(B) $\bar{x} \pm z_{(1-\alpha/2)}S/\sqrt{n}$
(C) $\bar{x} \pm t_{n-1,(1-\alpha/2)}\sigma/\sqrt{n}$	(D) $\bar{x} \pm t_{n-1,(1-\alpha/2)}S/\sqrt{n}$

13) The 99% confidence interval for μ is given by

(A) (22.65, 23.35)	(B) (15.3,17. 95)	(C) (22.50,23.52)	(D) (14.96, 29.04)

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A study of inpatient treatment days for psychiatric disorder selected randomly from two independent normal populations with equal variances gave the following results:

Group	Sample size	$\bar{x}$ (days)	S (days)
with schizophrenia	18	4.7	9.3
Bipolar disorder	10	8.8	11.5

14) The point estimate of the difference between first and second population means is

(A) 13.2	(B) 0.04	(C) 3	(D) -4.1

15) The standard error estimate of the difference between population means is

(A) 7.3256	(B) 5.8012	(C) 3.99	(D) 0.6543

16) The 95% confidence interval for the difference between population means is

(A) (0.52, 0.08)	(B) (-12.3, 4.10)	(C) (1.56, 3.92)	(D) (3.03, 6.39)

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In 19 subject, the mean isometric muscle strength for the operated limb (in newtons) was 250.8 with standard deviation of 130.9. We assume the population values to be approximately normally distributed, then

17) The point estimate of the population mean is:

(A) 250.8	(B) 0.57	(C) 1	(D) 0.1

18) The estimate of the standard error of the distribution of the sample mean $\bar{x}$ for the samples of size 19 is:

(A) 0.4165	(B) 0.1	(C) 3.16	(D) 30.03

19) The 99% confidence interval for μ is given by

(A) (87.65, 92.35)	(B) (185,295)	(C) (186.5,1 93.5)	(D) (181.1, 320.5)

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Suppose that Z is distributed according to the standard normal distribution, then:

20) The area under the curve to the right of z = 1.67 is:

(A) 0.7815	(B) 0.9525	(C) 0.1867	(D) 0.0154

21) The *z* value that has an area of 0.5 to its left, is:

(A) 0.5	(B) 1	(C) 0	(D) – 0.5

22) The value of ***k*** such that $P(k \leq Z \leq 1.67) = 0.8607$

(A) 0.9727	(B) 0.8665	(C) 1.33	(D) 1

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If the mean and standard deviation of serum iron for healthy men are 120 and 15 (micrograms per 100 ml), respectively, then

23) The probability that a sample of size 50 men will yield a mean less than 115 is

(A) 0.9909	(B) 0.0159	(C) 0.531	(D) 0.1243

24) The probability that a sample of size 50will yield a mean between 115 and 125 is

(A) 0.4016	(B) 0.9818	(C) 0.6159	(D) 0.4332