[](http://50years.ksu.edu.sa/)Department of Statistics



& Operations Research

College of Science, King Saud University

STAT 145

Final Exam

First Semester

1434 – 1435 H

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| اسم الطالب: |  | | |
| الرقم الجامعي |  | رقم التسلسل |  |
| رقم الشعبة |  | اسم الدكتور |  |

**INSTRUCTIONS:**

* **Answer** all questions.
* **Mobile phones** are **not allowed** in the classroom.
* **Time allowed** is **3 Hours**.
* For each question, **put the code** of the **correct answer** in capital letters:

**A, B, C,** and **D** in the following table beneath the question number.

* **Avoid overwritings / corrections** in **answers**
* **Use boll** or **ink pen only**

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| **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
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**Q1**: Suppose that the proportions of Diabetic (سكري) in Saudia and in Emirate are. If two random samples of  persons were drawn from the two populations and let **** be their sample Diabetic proportions; then

1. Find : The mean of the sampling distribution of :

(A) 0.0025 (B) 100 (C) 25 (D) 0.25

1. Find :The variance of the sampling distribution of :

(A) 0.433 (B) 0.001875 (C) 0.0433 (D) 0.1875

1. The approximate distribution of :

(A) Normal (B) t (C) Poisson (D) Binomial

1. The probability  is

(A) 0.4721 (B) 0.7549 (C) 0.5279 (D) 0.2451

1. If , then find  the mean of the sampling distribution of :

(A) 0.05 (B) 0.55 (C) 0.075 (D) -0.05

1. Find , the variance of the sampling distribution of :

(A) 0.876 (B) 0.3216 (C) 0.05723 (D) 0.003275

1. The probability  is

(A) 0.7241 (B) 0.75 (C) 0.6368 (D) 0.3632

**=======================**

**Q2**: If the patient stay time (مدة بقاء المريض) in a Hospital **A** and in a Hospital **B** is normally distributed with means  days and standard deviations days. If  are the mean stay times of two samples of sizes patients from Hospital **A** and from Hospital **B,** respectively**,** then:

1. The expectation E() is equal to:

(A) 0.338 (B) 5.5 (C) 1.3 (D) 0.5814

1. The variance *Var* () is equal to:

(A) 0.338 (B) 5.5 (C) 1.3 (D) 0.5814

1. The probability  is equal to:

(A) 0.5 (B) 0.6398 (C) 0.2341 (D) 0.3602

1. If , then the mean  is equal to:

(A) 0.338 (B) 5.5 (C) 1.3 (D) 0.5814

1. The variance  is equal to:

(A) 0.646 (B) 0.715 (C) 0.417 (D) 0.511

1. The probability  is equal to:

(A) 0.2776 (B) 0.7224 (C) 0.6628 (D) 0.3372

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**Q3:** Let be the mean patient stay time (مدة بقاء المريض) in a central Hospital, and statistical inference about is wanted, so a random sample of size 49 patients stayed in the Hospital was drawn. The sample gave the mean days and the standard deviation , then:

1. The point estimate of  is:

(A) 49 (B) 0.357 (C) 3.2 (D) 2.5

1. The estimation of standard error of the sampling distribution of  is equal to:

(A) 49 (B) 0.357 (C) 3.2 (D) 2.5

1. The lower bound of 95% confidence interval for is equal to:

)(ملاحظة :إذا لم تجدي قيمة درجات الحرية بالجدول نأخذ أقرب قيمة له )

(df=48 you take df=50)

(A) 2.5 (B) 3.2 (C) 2.843 (D) 2.613

1. The upper bound of 95% confidence interval for  is equal to:

(A) 3.79 (B) 3.557 (C) 4.0 (D) 3.9

* To test  with level , then

1. The value of the test statistic is equal to:

(A) z = -0.84 (B) t = - 0.84 (C) z = -0.12 (D) = -0.12

1. The rejection area is equal to:

(A)  (B)  (C)  (D) 

1. The decision is:

(A) Reject  (B) Accept  (C) No decision (D) Non is correct

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**Q4:** Two random samples were independently selected from two normal populations with equal variances. The results are summarized as follows:

|  |  |  |
| --- | --- | --- |
| Second Sample | First Sample |  |
| 9 | 16 | Sample size ( ) |
| 8.5 | 10.7 | Sample mean () |
| 5 | 3.5 | Sample variance ( |

Let and be the true means of the first and second populations, respectively

1. A point estimate for  (or ) is:

(A) 7 (B) 2.2 (C) 3.5 (D) 5

1. The pooled variance  is:

(A) 5 (B) 3.5 (C) 4.022 (D) 4.24

1. The distribution involved here in the statistical inference about is:

(A)  (B)  (C)  (D) Z

1. The formula of 95% confidence interval for  is equal to:

(A) (B) 

(C) (D) 

1. The lower bound of 95% confidence interval for  is equal to:

(A) 0.543 (B) 0.441 (C) 0.4752 (D) 0.4711

1. The upper bound of 95% confidence interval for  is equal to:

(A) 3.929 (B) 3.925 (C) 4.0 (D) 3.90

* To Test  with level , give :

1. The value of the test statistic

(A)  (B)  (C)  (D) 

1. The acceptance region of  is:

(A) (-1.645, 1.645) (B) (-1.96, 1.96) (C) (-2.069, 2.069) (D) (-1.714, 1.714)

1. The decision is:

(A) Accept  (B) Reject  (C) No decision (D) Non is correct

**Q5**: Let  be the proportions of vaccinated children in Riyadh and in Jeddah, and statistical inference about is wanted, so two random samples were drawn from the two populations of sizes  children which showed 350 children from Riyadh and 415 children from Jeddah were vaccinated. Denote by to the sample proportions of vaccinated children in Riyadh and in Jeddah, then:

1. A point estimate of the proportion is:

(A) 400 (B) 350 (C) 0.875 (D) 0.125

1. Find (), the estimation of the standard error of the of :

(A) 0.0002734 (B) 0.01654 (C) 0.875 (D) 0.125

1. The lower bound of 95% confidence interval for  is equal to:

(A) 0.8426 (B) 0.8478 (C) 0.875 (D) 0.125

1. The upper bound of 95% confidence interval for  is equal to:

(A) 0.9022 (B) 0.875 (C) 0.125 (D) 0.9074

* To Test  with level , give :

1. The value of the test statistic is equal to:

(A)  (B)  (C)  (D) 

1. The rejection region of  is equal to:

(A)  (B)  (C)  (D) 

1. The decision is:

(A) Accept  (B) Reject  (C) No decision (D) Non is correct

* To Test  with level , give :

1. The value of the pooled proportion  is equal to:

(A) 0.85 (B) 0.8525 (C) 0.875 (D) 0.83

1. The value of the test statistic is equal to:0.02395

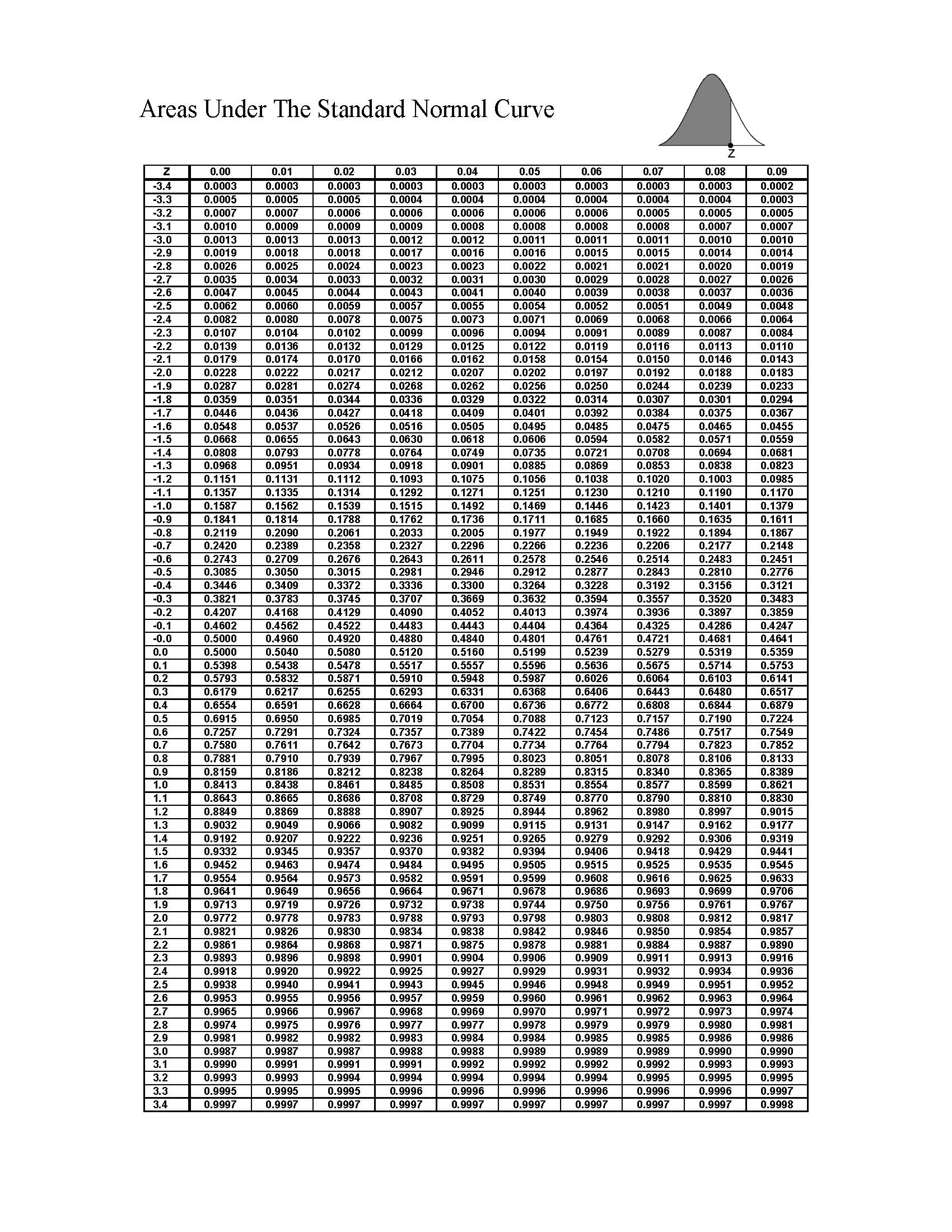
(A)  (B)  (C)  (D) 

1. The acceptance region of  is equal to:

(A)  (B)  (C) (D) 

1. The decision is:

(A) Accept  (B) Reject  (C) No decision (D) Non is correct

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