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



& Operations Research

College of Science, King Saud University

STAT 145

Second Midterm Exam

First Semester

1434 – 1435 H

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

**INSTRUCTIONS:**

* **Answer** all questions.
* **Mobile phones** are **not allowed** in the classroom.
* **Time allowed** is **90 Minutes**
* 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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| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
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| **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
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| **21** | **22** | **23** | **24** | **25** |
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**Q»»** (1-5): The following table represents the number of children in Saudi families of Riyadh.

If we randomly choose a child and using the following table. Then

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 |
| P(X=x) | 0.3 | 0.2 | 0.3 | 0.1 | 0.1 |



(A) 0.8 (B) 0.1 (C) 0.9 (D) 0.5



(A) 0.8 (B) 0.1 (C) 0.9 (D) 0.5



(A) 0.7 (B) 0.2 (C) 0.8 (D) 0.5



(A) 2 (B) 0 (C) 1 (D) 0.1

1. The expected number of the random X "E(X) = µ" is

A) 3.071 (B) 2.5 (C) 4.1875 (D) 9.434

Q»» (6-12): Suppose it is known that 80 % of a certain population is immune to some

disease. If a random sample of size 4 persons to selected this population. Let X represents

number of those who are immune to some disease within that selected sample; to follow a

Binomial distribution. Then

1. The parameters of binomial distribution are

(A) n=7, p=0.6 (B) n=6, p=0.7 (C) n=4, p=0.8 (D) n=8, p=0.4

1. The probability distribution of X, is

(A) (B)

(C) (D)

1. The probability that will be exactly four immune persons,

(A) 0.0112 (B) 0.4096 (C) 0.0819 (D) 0.0279

1. The probability that will be less than two immune persons,

(A) 0.0188 (B) 0.0018 (C) 0.00164 (D) 0.0272

1. The expected number immune persons in this sample will be

(A) 1.68 (B) 4.2 (C) 3.2 (D) 0.64

1. Its variance will be:

(A) 1.68 (B) 4.2 (C) 3.2 (D) 0.64

1. The standard deviation is

(A) 0.32 (B) 1.296 (C) 0.8 (D) 1.02

Q»» (13-18): At a certain hospital, if the average number of heart attacks in a year has a Poisson distribution (3). Then

1. The probability that the hospital has 3 heart attacks in a year is:

(A) 2.1 (B) 0.224 (C) 0.1804 (D) 0.378

1. The probability that the hospital has less than two heart attacks in a year is:

(A) 0.8009 (B) 0.1991 (C) 0.406 (D) 0.594

1. The probability that the hospital has more than one heart attacks in a year is:

(A) 0.8009 (B) 0.1991 (C) 0.406 (D) 0.594

1. The expected mean of heart attacks in a year is:

(A) 2.1 (B) 3 (C) 5.6 (D) 2

1. The variance of heart attacks in a year is:

(A) 2.1 (B) 3 (C) 5.6 (D) 2

1. The probability that the hospital has 3 heart attacks in 2 years is:

(A) 0.0892 (B) 1.449 (C) 0.015 (D) 2.366

Q»» (19-23): Suppose that the random variable has the standard normal distribution



(i.e., Z~N (0, 1)).

1. P (Z< 2.1) is

(A) 0.0228 (B) 0.9821 (C) 0.0179 (D) 0.9772

1. The value of P (Z>-1.63) is:

(A) 0.0746 (B) 0.8115 (C) 0.0516 (D) 0.9484

1. P (- 0.43 < Z< 3)

(A) 0.050 (B) 0.3108 (C) 0.6651 (D) 0.6270

1. If P (Z < k) = 0.6217, then the value of is:



(A) -3.1 (B) 0.31 (C) 3.1 (D) -0.31

1. The value of is:

(A) -2.306 (B) 1.86 (C) 2.306 (D) -1.86

Q»» (24-25): Suppose it is known that the weights of a certain population of individuals are

approximately normal with a mean of 70 kg and a standard deviation of 3 kg. if a person

is picked at random from this group, then the probability that the weight of the person

will be:

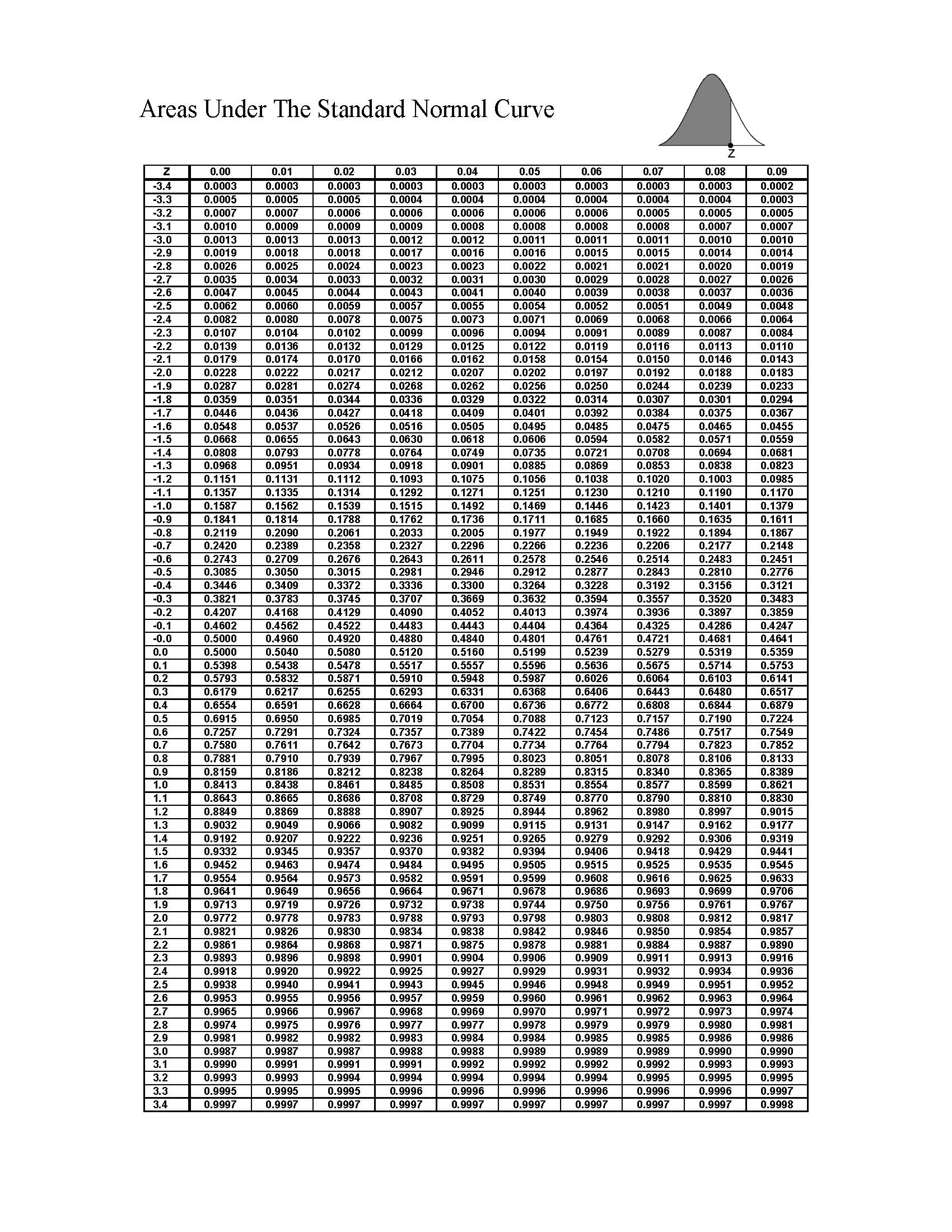
1. Between 67 and 73 kgs is

(A) 0.9544 (B) 0.0475 (C) 0.8607 (D) 0.6826

1. More than 79 kg is :

(A) 0.9082 (B) 0.9987 (C) 0.0013 (D) 0.2236

**Good Luck**

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