



College of Science.
Department of Statistics & Operations
Research

First Midterm Exam
Academic Year 1441-1442 Hijri- Second Semester

Exam Information معلومات الامتحان		
Course name	(حزم احصائية)	
Course Code	328 احص	
Exam Date	2020-03-05	1441-07-10
Exam Time	07:00 PM	
Exam Duration	1 hour and 30 m	ساعة واحدة ونصف
Classroom No.		
Instructor Name	وليد سيد امام	
		اسم المقرر
		رمز المقرر
		تاريخ الامتحان
		وقت الامتحان
		مدة الامتحان
		رقم قاعة الاختبار
		اسم استاذ المقرر

Student Information معلومات الطالب

Student's Name		اسم الطالب
ID number		الرقم الجامعي
Section No.		رقم الشعبة
Serial Number		الرقم التسلسلي
		تعليمات عامة:

General Instructions:

- Your Exam consists of PAGES (except this paper)
- Keep your mobile and smart watch out of the classroom.

- عدد صفحات الامتحان صفحة. (باستثناء هذه الورقة)
- يجب ابقاء الهواتف والساعات الذكية خارج قاعة الامتحان.

هذا الجزء خاص بأستاذ المادة

This section is ONLY for instructor

#	Course Learning Outcomes (CLOs)	Related Question (s)	Points	Final Score
1	The use of statistical packages in data analysis	Q1	9	25
2	Descriptive statistics, hypotheses testing, regression analysis, probability calculations, and writing the statistical reports	Q2+Q4	8	
3	Use the computer for analyzing and processing the real data	Q3	8	
4				
5				
6				
7				
8				

Answer the following questions

Minitab

(9 points)

Problem 1: (Minitab)

A medical researcher wants to study the effects of various factors on pulse rates. The researcher records the height, weight, gender, smoking preference, activity level, and resting pulse rate of 92 undergraduate students. The researcher then randomly divides the students into two groups. The first group runs in place for a minute while the other group stands still. Then, the researcher records the students' pulse rates again.

(The data set is Pulse.MTW in Minitab)

Variable	Description
<i>Pulse1</i>	The resting pulse of each student
<i>Pulse2</i>	The pulse after running or not running for each student (after treatment)
<i>Ran</i>	Whether or not the student ran in place: <i>Yes</i> or <i>No</i> (treatment)
<i>Smokes</i>	Smoker=1, nonsmoker=2
<i>Gender</i>	Male =1 , Female=2
<i>Height</i>	The height of the student, in inches
<i>Weight</i>	The weight of the student, in pounds
<i>Activity</i>	The usual activity level of the student: <i>Slight</i> , <i>Moderate</i> , or <i>A lot</i>

Use the descriptive statistics option to complete the following table

Variable	Mean		Coefficient of variation(%)		90% confidence interval for the mean	90% confidence interval for the standard deviation
	Male	Female	Male	Female	All students	All students
Pulse1						
Height						
Weight						

EXCEL

Problem 2: (Excel)

(8 points)

(a) Write the commands and results to calculate the following:

$$\binom{25}{5} =$$

$$\log_{10}(18) =$$

$$\sqrt[5]{5!} =$$

$$\sum_{x=5}^{\infty} \frac{1}{2^x x!} =$$

$$\int_3^{\infty} e^{-\frac{1}{2}(t-2)^2} dt =$$

(b) Let

$$A = \begin{bmatrix} 5 & 1 & 2 & 8 \\ 2 & 3 & 6 & 4 \\ 7 & 4 & 1 & 3 \\ 6 & 8 & 9 & 0 \end{bmatrix}, \quad B = \begin{bmatrix} 8 & 2 & 2 \\ 3 & 2 & 0 \\ 1 & 5 & 4 \\ 0 & 1 & 9 \end{bmatrix} \quad \text{and} \quad D = \begin{bmatrix} 1 & 8 \\ 7 & 3 \\ 5 & 4 \end{bmatrix}$$

Then calculate

(i) Determinate of A

(ii) The inverse of A=

(iii) B*D=

(c) If X is a random variable has the binomial distribution with

$$f(x) = \binom{12}{x} 0.3^x 0.7^{12-x}, x = 0, 1, \dots, 12.$$

Then calculate

(i) $P(X = 3)$

(ii) $P(X > 7)$

(v) $P(4 < X < 8)$

Problem 3: (Excel)

(6 points)

Use the data in the file Pulse.MTW and save it as excel file, then

(a) Calculate the mode(s) and median of the weight and height.

(b) Calculate the correlation coefficient between the weight and height.

(c) Estimate the regression model $Paluse1 = b_0 + b_1 (\text{height})$ and interpret the coefficients.

(d) Tests whether there is a significance difference between weight means of the male and female? Use 1% level of significance.

Problem : (Excel)

(2 points)

A clinic provides a program to help their clients lose weight and asks a consumer agency to investigate the effectiveness of the program. The agency takes a sample of 10 people, weighing each person in the sample before the program begins and 3 months later to produce the table below. Determine whether the program is effective? Use p-value approach.

Before	210	205	193	182	259	239	164	197	222	211
After	197	195	191	174	236	226	157	196	201	196