ABBES LAGHROUR University, Khenchela.
Faculty of Sciences. Department of Mathematics and Computer Science.
Academic year: 2024–2025.
1st Year mathematics, mathematics and computer science.
Module: Introduction to probability and descriptive statistics.
Responsible for the module : DERDOUKH .A

جامعة عباس لغرور خنشلة
ABBES LAGHROUR UNIVERSITY KHENCHELA

Full Name :	***Group:***

The correction of final Exam

❖ *Exercise 1:*

Read each statement carefully. Decide if it is true or false.

	Statement	***Decision***
1	*The median is the value that occurs most frequently in a dataset.*	*F*
2	*Standard deviation measures the spread or variability of data around the mean.*	*T*
3	*Descriptive statistics involves making predictions about a population based on sample data.*	*F*
4	*The sum of all relative frequencies in a frequency distribution should always be close to 1 (or 100%).*	*T*
5	*A frequency polygon is created by joining the midpoints of the tops of the bars in a histogram.*	*T*
6	*A histogram displays data using bars where the width of the bar represents a class interval and the height represents the frequency.*	*T*
7	*The intersection of two events A and B, denoted A∩B, means that either A or B or both occur.*	*F*
8	*A tree diagram can be used to represent the outcomes of a multi-stage experiment.*	*T*
9	*Permutations are arrangements where the order of selection does not matter.*	*F*

❖ *Exercise 2:*

Let's consider the discrete variable: "Number of books borrowed from a library by 100 students in a semester."

1) Complete the following statistical table

Number of Books (x_i)	*0*	*1*	*2*	*3*	*4*	*5*
Frequency (n_i)	*10*	***25***	*35*	*20*	***8***	*2*
$n_i \uparrow$	***10***	*35*	***70***	***90***	*98*	***100***

The results are rounded to 10^{-4}.

2) The Mode of this statistical series is

1)	***2***	***2)***	***3***	***3)***	***4***

3) The Arithmetic mean of this statistical series is

1)	***1.91***	***2)***	***1.97***	***3)***	***1.93***

4) The Variance of this statistical series is

1)	***1.3491***	***2)***	***1.4319***	***3)***	***1.4139***

5) The Standard deviation of this statistical series is

1)	***1.1516***	***2)***	***1.1615***	***3)***	***1.1165***

6) The coefficient of variation of this statistical series is

1)	**0.8956**	**2)**	**0.8596**	**3)**	**0.5869**

7) *The Absolute deviation mean of this statistical series is*

1)	**0.879**	**2)**	**0.978**	**3)**	**0.798**

8) *The quadratic mean of this statistical series is*

1)	**2.6298**	**2)**	**2.6928**	**3)**	**2.2869**

9) *The IQR of this statistical series is*

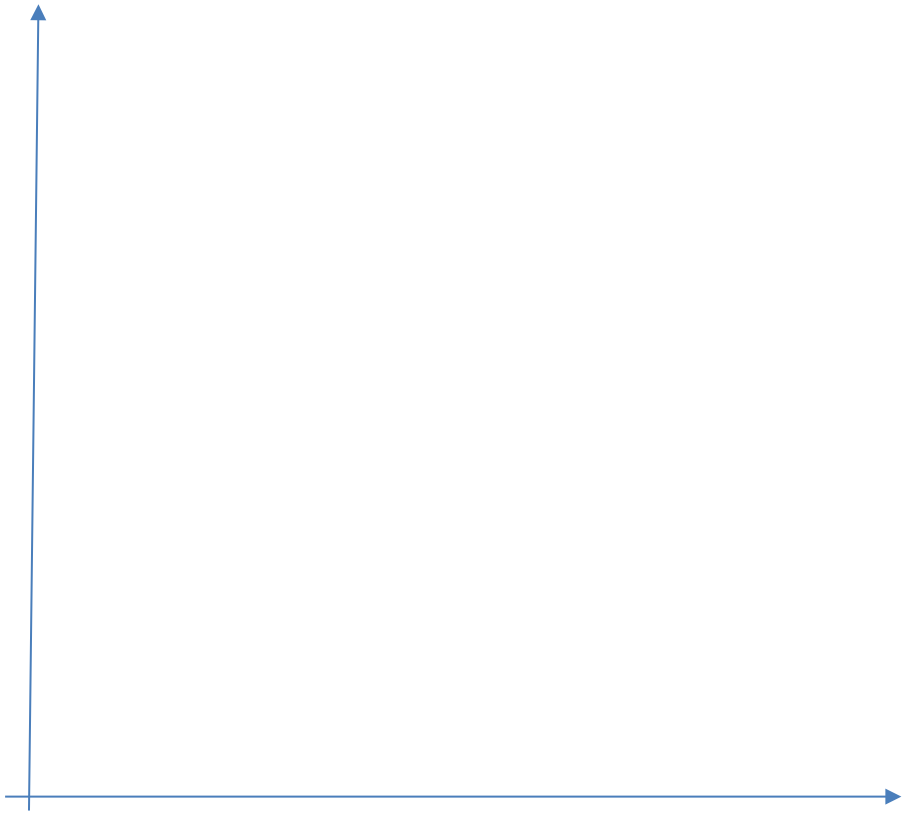
1)	**2**	**2)**	**3**	**3)**	**4**

❖ ***Exercise 3:***

The statistical series is represented by the following statistical table

Classes (I_i)	[40; 50[	[50; 60[	[60; 70[	[70; 80[	[80; 90[
Frequency (n_i)	*25*	*60*	*75*	*30*	*10*
$n_i \uparrow$	***25***	***85***	***160***	***190***	***200***
$F_i = f_i \uparrow$	***0.125***	***0.425***	***0.8***	***0.95***	***1***
C_i	***45***	***55***	***65***	***75***	***85***

1) *Complete the following statistical table.*
2) *Draw the distribution function*



The results are rounded to $\mathbf{10^{-4}}$.

3) *The First quartile of this statistical series is*

1)	**54.1667**	**2)**	**53.1667**	**3)**	**54.1669**

4) *The Median of this statistical series is*

1)	**62**	**2)**	**63**	**3)**	**64**

5) *The Third quartile of this statistical series is*

1)	**68.6605**	**2)**	**68.6667**	**3)**	**68.6617**

6) *The average of this statistical series is*

1)	**64**	**2)**	**63**	**3)**	**62**

ABBES LAGHROUR University, Khenchela.
Faculty of Sciences. Department of Mathematics and Computer Science.
Academic year: 2024–2025.
1st Year mathematics, mathematics and computer science.
Module: Introduction to probability and descriptive statistics.
Responsible for the module : DERDOUKH .A

جامعة عباس لغرور خنشلة
ABBES LAGHROUR UNIVERSITY KHENCHELA

❖ ***Exercise 4:***

I.

1) *In a race with 8 runners, how many different ways can the first, second, and third place medals (Gold, Silver, Bronze) be awarded?*
في سباق يضم 8 عدائين، بكم طريقة مختلفة يمكن منح ميداليات المركز الأول والثاني والثالث (ذهبي، فضي، برونزي)؟

1)	***512***	***2)***	***56***	***3)***	***336***

2) *You have 5 distinct mathematics books and 3 distinct physics books. In how many ways can you arrange these 8 books on a bookshelf if:*
لديك 5 كتب رياضيات مختلفة و 3 كتب فيزياء مختلفة. بكم طريقة يمكنك ترتيب هذه الكتب الثمانية على رف إذا:

a) *There are no restrictions? لا يوجد قيود*

1)	***1440***	***2)***	***40320***	***3)***	***3600***

b) *All the mathematics books must be together and all the physics books must be together?*
يجب أن تكون جميع كتب الرياضيات معًا وجميع كتب الفيزياء معًا؟

1)	***1440***	***2)***	***40320***	***3)***	***3600***

II.

Let A, B and C be three events, from the same probability space (Ω, F, P), such that:

$$\boldsymbol{P(A)=\frac{2}{5};\ P(C)=\frac{1}{2};\ P(A\cup B)=\frac{3}{4};\ P_A(B)=\frac{3}{10}\ \ and\ P_A(C)=\frac{1}{4}}$$

1) *The value of the conditional probability of $\bar{A}$ knowing C: ($P_C(\bar{A})$) is*

1)	$\boldsymbol{\frac{4}{5}}$	***2)***	$\boldsymbol{\frac{3}{5}}$	***3)***	$\boldsymbol{\frac{2}{5}}$

2) *The value of the conditional probability of $\bar{A}$ knowing $\bar{C}$: ($P_{\bar{C}}(\bar{A})$) is*

1)	$\boldsymbol{\frac{1}{5}}$	***2)***	$\boldsymbol{\frac{2}{5}}$	***3)***	$\boldsymbol{\frac{3}{5}}$

The value of the conditional probability of B (P(B)) .

1)	$\boldsymbol{\frac{47}{100}}$	***2)***	$\boldsymbol{\frac{48}{100}}$	***3)***	$\boldsymbol{\frac{49}{100}}$