Philadelphia University
Faculty of Science
Department of Basic Sciences & Mathematics
Second Semester [2017 – 2018]

Probability and Statistics (250231)
Second Exam
Sunday, 29 April 2018
Time: 50 minutes.

الاسم : .... الرقم : .... الشّعبة : ...... المدرّس : ....
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Question One: (*2.0 points each*). Write the correct answer for each of the following in the table provided. Only the answers in the table will be graded.

1	2	3	4	5	6	7

1. The **70th percentile** of the data 14, 21, 26, 27, 28, 32, 35, 35, 38, 45, 48, 50, 51, 51, 57 equals
    A. 51.
    B. 48.
    C. 45.
    D. 38.

2. If a distribution is **right–skewed**, then
    A. Mode < Mean < Median
    B. Mean < Median < Mode
    C. Mode < Median < Mean
    D. Median < Mean < Mode

3. For a sample with mean $\bar{x} = 38$ and standard deviation $s = 10$, the **z –score** of $x = 40$ is
    A. −0.5
    B. −0.2
    C. 0.5
    D. 0.2

4. A sample with 420 observations **normally distributed (bell–shaped)** has mean $\bar{x} = 60$ and standard deviation $s = 3$. The number of observations in the interval $[54, 66]$ is at least
    A. 228
    B. 272
    C. 399
    D. 136

5. For a sample space $S = \{e_1, e_2, e_3\}$, if $P(e_1) = 2P(e_3)$ and $P(e_2) = \dfrac{1}{5}$, then $P(e_1)$ equals
    A. $\dfrac{3}{5}$
    B. $\dfrac{8}{15}$
    C. $\dfrac{2}{15}$
    D. $\dfrac{3}{20}$

6. The **shaded region** (المنطقة المظللة) in the Venn diagram shown **represents** (تمثل) the event
    A. $\bar{A} \cap B$
    B. $\bar{A} \cup B$
    C. $A \cap \bar{B}$
    D. $A \cup \bar{B}$

7. If A and B are **disjoint events** such that $P(A) = 0.35$ and $P(B) = 0.50$, then the probability that **both events will not occur** is
    A. 0
    B. 0.675
    C. 0.85
    D. 0.15
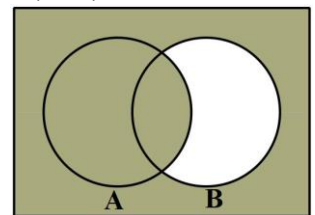
Question Two: (2+3 points)

For $n = 5$ ordered pairs (أزواج مرتبة) data we have

$$\sum x = 4 \qquad \sum(x^2) = 18$$
$$\sum y = 13 \qquad \sum(y^2) = 37.5$$
$$\sum(xy) = 3$$

Find:

1) Pearson's correlation coefficient r.

2) The regression line equation that best fits the data.

Question Three: (3 points)

Let A and B be two exhaustive events such that $P(A) = 0.76$ and $P(B) = 0.58$. Evaluate $P(B - A)$.