| Subject：**統計學 (一)** | 開課班別：**統計學整合開課** | | | Teacher：**Han-Ming Wu** |
|---|---|---|---|---|
| Date：24 Oct.（Thur）15:00-16:00 | ※Allowed:「O」，Prohibited:「×」 | | | 1. 需加發計算紙或答案紙請在試題內封袋備註。 |
| Pages: 3，Copies: 50 | Calculator | Textbook | Class notes | 3C product | 2. 為環保節能減碳，試題一律採雙面印刷，如有特殊印製需求，請註記： |
| Scope: §ch1-3 | O | × | × | × | |

**Notes:**

(1) Fill in the student ID number and name on the answer sheet。

(2) Answer all questions in English (ignore the grammar and spelling)。

(3) Answer each question in the order it appears。The total score is 120.

(4) It is recommended to use a dark ballpoint pen。(pencil is allowed)

(5) The calculation process (for parts **IV** and **V**) is required (calculate to 4 decimal places)。

(6) Return both the answer sheet and the question sheet.

**(-) Declaration** (0%): Please transcribe the following oath onto the first page of the answer sheet in either Chinese or English. (複寫下列宣誓詞至答案卷的第一頁上)。(10 points will be deducted if not written.)(不寫扣 10 分)

0. " 本人姓名 恪遵各項考試規則，若如違反，願受校方最嚴厲處罰，謹誓。"

"I (your name here) will strictly adhere to all examination rules. If I break this oath, I am willing to accept the most severe punishment imposed by the school. Solemnly sworn."

**(I) Multiple choice** (20%, 5% each); select one correct answer.

1. A sample of 15 children shows their favorite kind of pet:
   Dog, Gerbil, Cat, Fish, Dog, Dog, Gerbil, Cat, Dog, Cat, Lizard, Fish, Dog, Fish, Dog.
   Which of the following displays is most appropriate for this data? (A). Side-by-side bar chart　(B). Histogram　(C). Stacked bar chart　(D). Pie chart

2. Histograms based on data on housing prices and salaries typically are (A). skewed to the left.　(B). skewed to the right.　(C). stacked.　(D). symmetric.

3. The measure of location which is the most likely to be influenced by extreme values in the data set is the (A). range.　(B). median.　(C). mode.　(D). mean.

4. Statements about the proportion of data values that must be within a specified number of standard deviations of the mean can be made using (A). Chebyshev's theorem.　(B). The empirical rule.　(C). A five-number summary.　(D). Percentiles.

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| 本試題共3頁，印刷份數: 50 份 | 計算機 | 課本 | 筆記 | 字典 | 手機平板筆電 | 2. 為環保節能減碳，試題一律採雙面印刷，如有特殊印製需求，請註記： |
|---|---|---|---|---|---|---|
| 備註：注意事項要看!! (Scope: §ch1-3) | O | × | × | × | × | |

**(II) Fill-in-the-blank** (Correct spelling should be used if possible.) (20%, 10% each)

5. The growth factors in the population of Dalton for the past three years are shown below.

    Year 1: 1.0313; Year 2: 1.0429; Year 3: 1.0343.

    What has been the percentage growth in the population of Dalton? _____.

6. Let the $i$th data value of the variable $x$ denotes by $x_i$. The $z$-score is often called the _____ value of $x_i$. The formula is: _____ .

**(III) Short answer** (20%, 10% each)(write down the statement (or definition), formula if any, interpretation)

7. What is the Chebyshev's theorem?

8. What is the Covariance?

**(IV) Calculation** (40%, 20% each)

9. **Apple iPads in Schools.** The New York Times reported that Apple has unveiled a new iPad marketed specifically to school districts for use by students (The New York Times website). The 9.7-inch iPads will have faster processors and a cheaper price point in an effort to take market share away from Google Chromebooks in public school districts. Suppose that the following data represent the percentages of students currently using Apple iPads for a sample of 18 U.S. public school districts. ($\bar{x} = 24.67, s = 11.87$)

    15, 22, 12, 21, 26, 18, 42, 29, 64, 20, 15, 22, 18, 24, 27, 24, 26, 19

    (a) Compute the first and third quartiles for these data.
    (b) Identify the outliers in these data if any. (The calculation process is required)

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**(V) Bonus** (20%)

10. Jason just completed 15 credit hours at a local college. His grade report is presented below.

| Course: | Calculus | Biology | English | Music | P.E. |
|---|---|---|---|---|---|
| Credit Hours: | 5 | 4 | 3 | 2 | 1 |
| Grades: | C | A | D | B | A |

The local university uses a 4 point grading system, i.e., $A = 4, B = 3, C = 2, D = 1, F = 0$. Compute Jason's semester grade point average.

<The blank pages at the back can be used as scratch paper. (後面空白頁可當計算紙)>

注意： 1、考試求公平及公正，請同學務必自律，維護學校與學生之榮譽。

2、考試時不得有交談、窺視、夾帶、抄襲、傳遞、代考或其它作弊等舞弊行為，考畢務必交卷，不得攜卷出場，違者依考場規則議處。