SE 101: Introduction to the Methods of Software Engineering

In-Lab Quiz #1

J.M. Atlee
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20 min.

The only aid allowed is an electronic calculator in which notes cannot be stored. No texts or notes are permitted.

1. Which of the following sentences is incorrect?

   - ☐ A **technologist** is an engineer-in-training.
   - ☐ A **professional engineer** is responsible for the competent performance of the work which he or she supervises.
   - ☐ A **skilled worker** has highly-developed manual skills that have been learned through apprenticeship rather than by formal education.
   - ☐ The standard educational requirement for technologists and technicians is graduation from a technology program or a technician program, respectively, at a community college.
   - ☐ In Canada, the title **Professional Engineer** is restricted, by law, to those persons who have demonstrated their competence and have been licensed by a provincial association of professional engineers.

2. Which of the following steps in the engineering design process does *not* affect the contents of the design's drawings and reports?

   - ☐ Definition of the design criteria
   - ☐ Synthesis
   - ☐ Analysis
   - ☐ Optimization
   - ☐ Communication

3. Which of the following is *not* a required part of a technical memo:

   - ☐ Name of the sender (TO:)
   - ☐ Name of recipient (FROM:)
   - ☐ Subject (SUBJECT:)
   - ☐ Date
   - ☐ Signature

4. The units of the result of the formula

$$2 \times 10^4 \frac{\text{ft} \cdot \text{lb}}{\text{min}} \times \frac{1 \cdot \text{HP} \cdot \text{sec}}{550 \text{ ft} \cdot \text{lb}}$$

(which is not exclusively in SI units) are

- ☐ W
- ☐ None, the result is unit-less
- ☐ min
- ☐ HP
- ☐ sec

5. For the calculation 36.59+74.3-125.7+52.761, which is the correct result to include in a formal report?

- ☐ 37.951
- ☐ 37.95
- ☐ 37.9
- ☐ 38
- ☐ 38.0

6. Alice is trying to decide whether to buy a technical book or to borrow it periodically from his classmate. She decides to apply the formal decision-making process using the criteria of cost and convenience, which she weighs as each being 50%. It would cost Alice $40 to buy the textbook, whereas it costs her nothing to borrow it. Owning the book would be five times more convenient than borrowing the book, since she would then be able to access the book easily whenever she wanted. She correctly calculates that

- ☐ Buying the book is better (by 10 points) than borrowing the book.
- ☐ Buying the book is worse (by 10 points) than borrowing the book.
- ☐ Buying the book is better (by 90 points) than borrowing the book.
- ☐ It doesn't matter: either action is equally beneficial to her.

7. Choose the best sentence:

- ☐ 100 students were accepted into the Software Engineering program, out of the 600 applications we received.
- ☐ One hundred students were accepted into the Software Engineering program, out of the six hundred applications we received.
- ☐ We received 600 applications to the Software Engineering program, from which we accepted 100 students.
- ☐ We received six hundred applications to the Software Engineering program, from which we accepted one hundred students.
- ☐ In Software Engineering, we received 600 applications, and accepted 100 students.

8. The approximate worst-case error in

$$f = (x/z) - 5y^2$$

as a result of small errors in Δx, Δy, Δz, is

- ☐ $\Delta f = \left| \frac{-1}{z^2} - 10y \right| \cdot \Delta x + \left| \frac{-1}{z^2} - 10y \right| \cdot \Delta y + \left| \frac{-1}{z^2} - 10y \right| \cdot \Delta z$
- ☐ $\Delta f = (\frac{1}{z})\Delta x - 10y\Delta y + (\frac{-x}{z^2})\Delta z$
- ☐ $\Delta f = (\frac{1}{z})\Delta x - 10y\Delta y + (\frac{x}{z^2})\Delta z$
- ☐ $\Delta f = \left|\frac{1}{z}\right|\left|\Delta x\right| - \left|10y\right|\left|\Delta y\right| + \left|\frac{x}{z^2}\right|\left|\Delta z\right|$
- ☐ $\Delta f = \left|\frac{1}{z}\right|\left|\Delta x\right| + \left|10y\right|\left|\Delta y\right| + \left|\frac{x}{z^2}\right|\left|\Delta z\right|$

9. The arithmetic mean of a sample of numbers subject to random error is

- ☐ More precise than a single number in the set
- ☐ As precise as a single number in the set
- ☐ Less precise than a single number in the set

10. Today's lecture will cover

   - What is an Engineer?
   - The Role of the Engineer
   - Engineering Disciplines
   - Becoming a Competent Engineer
   - Some Challenges for Engineering

Choose the best action(s) to correct the grammar and presentation of the above list.

- ☐ (1) Place a colon after the word "cover".
- ☐ (2) Make all of entries either sentences or sentence fragments.
- ☐ (3) Remove the apostrophe after "Today".
- ☐ (4) Write the entries in all lowercase letters.
- ☐ (5) Do all of the above.

11. Choose the best sentence:

- ☐ We classify measurement errors into two categories: **systemic errors,** which are biased, and **random errors,** which are unbiased.
- ☐ We classify measurement errors into two categories: (1) **Systemic errors,** which are biased, and (2) **Random errors,** which are unbiased.
- ☐ We classify measurement errors into two categories: **systemic errors** which are biased, and **random errors** which are unbiased.
- ☐ We classify measurement errors into: **systemic errors** and **random errors**.
- ☐ We classify measurement errors into two categories: **systemic errors,** which are biased; and **random errors,** which are unbiased.

12. Choose the best sentence:

    - ☐ Minds are like parachutes; they function only when open.
    - ☐ Minds are like parachutes; They function only when open.
    - ☐ Minds are like parachutes, they function only when open.
    - ☐ Minds are like parachutes: they function only when open.
    - ☐ Minds are like parachutes: They function only when open.

13. Choose the best sentence:

    - ☐ The medical school will be housed in a new, two-story, brick building.
    - ☐ The medical school will be housed in a new two-story brick-building.
    - ☐ The medical school will be housed in a new, two-story–brick building.
    - ☐ The medical school will be housed in a new, two-story brick-building.
    - ☐ The medical school will be housed in a new, two story, brick building.

14. Choose the best sentence:

    - ☐ Chris's dog is sleeping in its doghouse.
    - ☐ Chris' dog is sleeping in its doghouse.
    - ☐ Chris's dog is sleeping in it's doghouse.
    - ☐ Chris' dog is sleeping in it's doghouse.

15. Choose the best sentence:

    - ☐ Formal writing allows metric abbreviations, e.g., 12 kg, 5 cm, etc.
    - ☐ Formal writing allows metric abbreviations (e.g. 12 kg, 5 cm, etc.).
    - ☐ Formal writing allows metric abbreviations (e.g., 12 kg, 5 cm).
    - ☐ Formal writing allows metric abbreviations (e.g. 12 kg, 5 cm, etc.).
    - ☐ Formal writing allows metric abbreviations: 12 kg, 5 cm, etc.

BONUS: Which of the following conflict management strategies work(s) best when you care about the outcome of the conflict, you care about the people involved in the conflict, and you don't have a short deadline by which you need to resolve the conflict?

☐ Force

☐ Smooth

☐ Confront

☐ Compromise

☐ Confront or compromise