

Assignment 1 Marking Key

For Students
(*Accepted Answers and Select Solutions*)
CIS 2910 Discrete Structures

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Question 1: (all or nothing answer.)
706

Question 2: (all or nothing answer.)
 $4\frac{8}{9}$ or $\frac{44}{9}$

Question 3: (all or nothing answer.)

New version of assignment: 55; old version of assignment: $49\frac{3}{5}$ or $\frac{248}{5}$.

Question 4: This question was marked out of 4.5 – what this means is that you start with a score of 4.5, and for each error, you are deducted 0.5. If you have no errors at all, you get the perfect score of 4.0.

Question 5: These questions are all-or-nothing. For each of the subquestions a, b, c , you will receive a score of 1.0 or 0.0. A common mistake for c is for students to write $0, \frac{1}{2}, 1, \frac{3}{2}$ this is incorrect because the notation $\lfloor x \rfloor$ means to floor (round down) the value of x to the previous integer.

Question 6: This question was marked all or nothing.

Question 7: Most students earned all 2 marks. It was possible to earn 1 mark if a single adding or single multiplication error was detected – I've circled this error for applicable students. For two errors or errors which involved the interpretation of the sum, no marks were awarded.

Question 8: Most students earned all 2 marks. Erroneous answers resulting from single addition or single multiplication errors were awarded 1 mark. Two or more errors or errors resulting from understanding the double sum were awarded no marks.

Question 9: (each a, b, c is an all-or-nothing question.)

There were a variety of answers for this question – here are the answers accepted for one (1) mark.

(9a)

$$a_n = (n + 2)! - 2 \text{ given } n \geq 0;$$

$$a_n = (n + 1)! - 2 \text{ given } n \geq 1;$$

$$a_n = n! - 2 \text{ given } n \geq 2;$$

(9b)

$$a_n = n(n + 1) = n^2 + n \text{ given } n \geq 0;$$

$$a_n = n(n - 1) = n^2 - n \text{ given } n \geq 1;$$

(9b)

$$a_n = 3n^2 + 1 \text{ given } n \geq 0;$$

$$a_n = 3(n - 1)^2 + 1 = 3n^2 - 6n + 4 \text{ given } n \geq 1;$$

If the answer was provided WITHOUT a boundary condition for n , a full mark (1) was given. If the answer was provided WITH THE WRONG boundary condition for n , no mark was given.

If a recurrence formula was given, a full mark (1) was awarded provided it was correct. A recurrence formula that required reference to both a_{n-1} and a_{n-2} was awarded no marks as there exists solutions which require reference to only one preceding term in the sequence. A recurrence formula is only correct if a base case was described (a_0 or a_1). Generally, we do not accept recurrent formulae in this course; however, the question did not stipulate that the answer must be $O(1)$. Be sure to answer with $O(1)$ equations (non-recurrent, closed) in future evaluations in this course.