Here are some tips based on mistakes I have seen on quizzes and exams from past CSE 2111 classes:

**Boolean Functions:**

A) Don’t put quotes around Boolean Values. Use `True` not “`True`”.

B) If you are asked, for example, to write a formula to check if the value in cell A1 is greater than 3, you can write this as `=A1 > 3`. Don’t write `=IF(A1 >3, True, False)`. This works, but we will take points off since it is more complicated than it needs to be.

C) Don’t put quotes around the logical test in an IF function.

- `=IF(A1 > 3, “reject”, “accept”)` is correct.
- `=IF(“A1 > 3”, “reject”, “accept”)` is not correct.

On the other hand, you do need quotes around the criteria for SUMIF, AVERAGEIF and COUNTIF.

- `=SUMIF(D2:D8, “>3000”)` is correct.
- `=SUMIF(D2:D8, >3000)` is not correct.

D) Suppose that you want to print “buy” in B1 if the value in A1 is TRUE and “not buy” if the value in A1 is FALSE.

You should write the formula as `=IF(A1, “buy”, “not buy”)`

Don’t use: `IF(A1 = TRUE, “buy”, “not buy”)`

E) What if you want to “sell” if A1 is FALSE and “not sell” if A1 is TRUE? You can do this in a few different ways:

- `=IF(NOT(A1), “sell”, “don’t sell”)` or `=IF(A1 = False, “sell”, “don’t sell”)` or even `=IF(A1, “don’t sell”, “sell”)`

F) “greater than or equal to” is written as `>=`, not `=>`. “Less than or equal to” is `<=`.

G) Ranges should only be used if the cells contain TRUE or FALSE. Something like `=AND(A1:A4 < 10)` doesn’t work.
Here are some more examples that you should understand:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name</td>
<td>Year</td>
<td>Grade</td>
<td>CSE Major</td>
</tr>
<tr>
<td>2</td>
<td>Barack</td>
<td>Senior</td>
<td>90</td>
<td>TRUE</td>
</tr>
<tr>
<td>3</td>
<td>Mitt</td>
<td>Junior</td>
<td>92</td>
<td>FALSE</td>
</tr>
<tr>
<td>4</td>
<td>Rick</td>
<td>Senior</td>
<td>82</td>
<td>FALSE</td>
</tr>
<tr>
<td>5</td>
<td>Ron</td>
<td>Freshman</td>
<td>84</td>
<td>TRUE</td>
</tr>
<tr>
<td>6</td>
<td>Michelle</td>
<td>Sophomore</td>
<td>87</td>
<td>TRUE</td>
</tr>
<tr>
<td>7</td>
<td>Newt</td>
<td>Freshman</td>
<td>75</td>
<td>FALSE</td>
</tr>
<tr>
<td>8</td>
<td>Herman</td>
<td>Junior</td>
<td>73</td>
<td>TRUE</td>
</tr>
</tbody>
</table>

1) “Every Student is a CSE major” or “All students are CSE majors”
Solution: =AND(D2:D8)

2) “At least one student is a CSE major”
Solution: =OR(D2:D8)

3) “No Student is a CSE major” or “None of the students is a CSE major”
Solution: =NOT(OR(D2:D8))

4) “Only Seniors are CSE majors”
This means at least one senior is a CSE major and none of the others is a CSE major:
Solution: =AND(OR(D2, D4), NOT(OR(D3, D5:D8)))
Note that the OR function can take multiple arguments that are either single cells or ranges.

The following two solutions will also work, but you may lose points because the solution above is more concise. Make sure that you understand the NOT(OR(...)) structure for the exam.

=AND(OR(D2, D4), NOT(D3), NOT(D5), NOT(D6), NOT(D7), NOT(D8))

=AND(OR(D2, D4), D3=FALSE, D5=FALSE, D6=FALSE, D7=FALSE, D8=FALSE)

5) “Students who scored 90 or above get an A, students who scored 80 or above get a B, and students who scored less than 80 get a C. Write a formula in cell E2 that can be copied down the column to determine each students letter grade”.
Solution: =IF(C2 >=90, “A”, IF(C2 >= 80, “B”, “C”))
Another Good Solution: =IF(C2 < 80, “C”, IF(C2 < 90, “B”, “A”))
Financial Functions:

A) For the financial functions, make sure it is clear to you when values should be negative and when they should be positive. In general, money coming out of your pocket (such as a payment) is negative, while money that you get is positive. If you are the borrower, the value of a loan is positive, even if you plan to later spend the money on something else such as a car.

B) Always check that you are answering the questions in the correct units. Compare the two following scenarios:

i) “Write an Excel formula to determine how many months it will take to save $12,000 if I put $8,000 into a savings account that pays 6% annual interest compounded monthly.”

The correct answer is =NPER(6%/12, 0, -8000, 12000). Since the rate was converted to rate per month by dividing by 12, the result will be the number of periods in months.

ii) “Write an Excel formula to determine how many years it will take to save $12,000 if I put $8,000 into a savings account that pays 6% annual interest compounded monthly.”

The correct answer is =NPER(6%/12, 0, -8000, 12000) / 12. Since the rate was converted to rate per month by dividing by 12, the result will be the number of periods in months. We need to divide by 12 to convert to years.

C) Answers to rate questions also sometimes need to have a conversion factor outside of the formula. For example:

“What is the annual rate of interest on a loan of $2,000 if you pay $100 a month for 2 years”?

Answer: =RATE(2*12, -100, 2000, 0) * 12

Since the payment is $100 per month, the RATE function will give us the rate per month. We need to multiply by 12 to get the rate per year.

D) If you use a number as one of the arguments to a function, don’t use commas or dollar signs. E.g. $40,000 should be entered as 40000.

E) Present Value (PV) usually refers to the value at the beginning of a transaction. Future Value (FV) usually refers to the value at the end of a transaction. This can be confusing, since if an investment was started in the past and we want to know its current value, we are actually looking for its FV.
F) Review balloon payments. Balloon payments are usually negative for the person taking out the loan.

G) Make sure you understand when to use False and when to use True as the value of the 4\textsuperscript{th} argument for HLOOKUP and VLOOKUP.