CGS2531 Problem Solving Using Computer Software
Sample Exam 2.

Select the most appropriate answer(s).

1. ______ Which of the following is true?
   A) A worksheet contains one or more workbooks.
   B) A workbook contains one or more worksheets.
   C) A spreadsheet contains one or more worksheets.
   D) A worksheet contains one or more spreadsheets.
   E) None of the above.

2. ______ You are a series of data stored in A1:A20. You want to multiply all the data in column A with a number in D1 and store them in B1:B20. What formula do you have to put in B1 such that you can simply auto-fill all the way to B20? (two correct answers)
   A) =A1*D1.
   C) =$A$1*D1.

3. ______ Which of the following is not a symbol for a mathematical operation in Excel?
   A) +.
   B) –.
   C) *.
   D) C.
   E) %.

4. ______ Given the formula =B5*B6+C3/D4^2, which expression would be evaluated first?
   A) B5*B6.
   B) B6+C3.
   D) D4^2.
   E) None of the above.

5. ______ If you see the term “C3” used in relation to Excel, this refers to what?
   A) Absolute reference.
   B) Cell reference.
   C) Worksheet reference.
   D) Mixed reference.
   E) None of the above.

6. ______ If you see the term “C$3” used in relation to Excel, this refers to what?
   A) Absolute reference.
   B) Cell reference.
   C) Worksheet reference.
   D) Mixed reference.
   E) None of the above.
7. ______ If you see the term “$C$3” used in relation to Excel, this refers to what?
   A) Absolute reference.
   B) Cell reference.
   C) Worksheet reference.
   D) Mixed reference.
   E) None of the above.

8. ______ Which of the following is entered first when creating a formula?
   A) The equal sign.
   B) A math operator
   C) A function
   D) A value
   E) None of the above.

9. ______ Which option is not available when creating a custom header or custom footer?
   (A) Format Text
   (B) Insert Formula
   (C) Insert Number of Pages
   (D) Format Picture
   (E) None of the above.

10. ______ A teacher is using the following table and VLOOKUP function to convert students’ grades to letter grades. What is wrong with the table?
    (A) There is no label in B1.   (B) The table is not in ascending order.
    (C) There is no upper bound for column A (i.e. 100).
    (D) There are two D’s in 2nd column.  (E) idk

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
</tr>
<tr>
<td>1</td>
<td>Grades</td>
</tr>
<tr>
<td>2</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

11. ______ Assuming the problem of the table in previous question is fixed. What formula would you input in cell E1 to convert students’ grades (stored in column D) to letter grades? Assuming you have 1000 students’ grades storing in column D. Choose the one which can help you finish you work more efficiently.
    (A) =VLOOKUP(D1,A1:B6,2)
    (B) =VLOOKUP($D$1,A1:B6,2)
    (C) =VLOOKUP(D1,$A$1:$B$6,1)
    (D) =VLOOKUP(D1,$A$1:$B$6,2)
    (E) =VLOOKUP($D$1,$A$1:$B$6,1)
12. The entry =PMT(C5/12, C6*12,C7):
   (A) is invalid because the cell reference C7 is not absolute
   (B) computes an annual payment.
   (C) Divides the interest rate in C5, multiplies the number of periods in C6, and C7 is the loan amount.
   (D) is invalid because the value in C7 is negative.

13. Which of the following references would indicate that the row would change but the column would not change during the copy process?
   (A) $C$4
   (B) = C4
   (C) $C4
   (D) C$4
   (E) None of the above.

14. Which function will return the number of nonempty cells in the range A2 through A16, when the cells contain text as well as numeric entries?
   (A) = COUNT(A2:A16)
   (B) = COUNTA(A2 : A16)
   (C) = COUNTA(A2 , A16)
   (D) = COUNTIF(A2 , A16)
   (E) = COUNT(A2 , A16)

15. Which type of chart is best to portray proportion or market share?
   (A) Pie chart.
   (B) Line chart.
   (C) Column chart.
   (D) Combination chart.
   (E) None of the above.

16. When drawing a chart, if multiple data series are selected and rows are specified,
   (A) The first row will be used for the category labels
   (B) The first row will be used for the legend.
   (C) The last column will be used for the legend.
   (D) The first column will be used for the category labels.

17. The command that lets you specify the order in which rows in a table appear is:
   (A) AutoFilter command.
   (B) Sort.
   (C) CountIF
   (D) SortIF
   (E) None of the above.

18. =AND(0,1) and =OR(1,0) return ____ and ____, respectively.
   (A) TRUE and TRUE.
   (B) FALSE and TRUE.
   (C) TRUE and FALSE.
   (D) 1 and 0.
   (E) 0 and 0.
Excel exercises:

1. Download sample_exam2.xlsx from the course website and open it. Go to Sheet raw data. This is the sheet you will be working on in this exercise.

2. Select A1:G1 and add bottom border by click HOME → Font → Borders. Change the fill color of A1:G1 to Dark blue, Text 2, Lighter 60%.

3. Select A2:B20, add right and bottom border and set the fill color to Dark blue, Text 2, Lighter 80%.


5. Select C2:G20, Click on HOME → Number → Decrease Decimal to make the decimal place 0.

6. Type SUM in B21, Average in B22, Sum in H1, Total Grades in I1, Bonus in J1, Final Grades in K1, and Letter Grades in L1. Do you notice Excel auto adjust cell format (color and borders) for you?

7. In C21, input formula =SUM(C2:C20). This calculates the summation of hw1 of all students. Now, auto-fill to calculate the summations for other homework and exams.

8. Do the same for row 22 except that use the function AVERAGE to calculate the averages. Can you auto-fill from C21 to C22 and then change function name from SUM to average?


10. In column I, you want to calculate the weighted grades for each student. Each exam weights 35% of the total grades and each homework weights 10%. Input appropriate formula in I2 and then auto-fill from I2 to I20.

11. Make the decimal place column H and I to 0. At this point, you spreadsheet should look like the spreadsheet Stage 1.

12. You want to give a 2% bonus to students whose first name is John. In N2, input formula =IF(A2="John",I2*A32,0). Explain in plain English what does this formula do. Auto-fill from J2 to J20. The results are all 0’s which does not make sense because there are couples John’s in the database. What goes wrong here? How do you fix this problem so that John can get the bonus points?
13. In K2, input formula =I2+J2 then auto-fill. At this point, your spreadsheet should look like *Stage2*.

14. You want to calculate the letter grades of each student based on their Final Grades. You want to use the table A24:B29 but there is something wrong with it. When using VLOOKUP or HLOOKUP, the numeric data *have to be in ascending order*. Can you change the ordering of the table by Excel Sort? If yes, explain how in details. If not, manual adjust entries in the table so that it’s in ascending order.

15. Input formula =VLOOKUP(K2,A24:B29,2) in L2 and then auto-fill. There appear to be a lot of columns with error message ‘#N/A’. What goes wrong here? How do you fix it?

16. You can use absolute references to define a table. For example, $A$24:$B$29 to define the Grades table. However, it can be confusing when you have many tables in one sheet. One way to prevent confusion is to give names to tables. This also makes cross-sheet referencing much easier. Select A24:B29 and then input GRADE_TABLE in the **Name Box**. If you don’t know what Name Box is, go to the end of this document.

17. Input formula =VLOOKUP(K2,GRADE_TABLE,2) in M2 and then auto-fill. Column L and M should be identical.

18. You are wondering how many students got A in this class. Input A in H25, and input formula =COUNTIF(L2:L20,”=A”) in H26.
   Input B, C, D, E in I25, J25, K25, L25, respectively. Apply similar formulas to count the numbers for B,C, D and E and store them in I26 – L26.
   At this point, your spreadsheet should look like Stage 3.

19. Draw a histogram of the letter grades. Type Histogram in G26. Select G25:L26, click **Insert** → **Charts** → **Column** → **Clustered Column**.

20. Select G25:L26, click **Insert** → **Charts** → **Pie** → **Pie**. What does this pie chart tell you?

21. Select C2:D20, click **Insert** → **Charts** → **Column** → **Clustered Column**. Add chart title ‘Simple’ to it.

22. Select C1:D20, click **Insert** → **Charts** → **Column** → **Clustered Column**. Add chart title ‘Field Name defined’ to it. Note that the legends of the chart are added automatically.
23. Select B1:D20, click Insert→Charts→Column→Clustered Column. Add chart title ‘Field/Category Name defined’ to it. Put these three charts together and compare. What conclusion can you draw from step 21-23?

24. Select B1:B20. Hold the Ctrl key and select D1:D20, E1:E20 and finally K1:K20. Do not let go the Ctrl key while selecting these extra columns. Click Insert→Charts→Column→Clustered Column.

25. Choose any chart from the four charts you just created. Resize the chart, you notice the range of y-axis change dynamically as the size of the chart change. How do you fix the range of y-axis to [0 100]?


27. You really don’t like the student John Smith because he always showed up in class drunk. You change his final grade to −100 and hoping he would get an E. However, his letter grade shows as ‘#N/A’. What can you do to the GRADE_TABLE to make his letter grade E?

28. Select B1 to D1. Hold the Ctrl Key and then select B17:D20. Select Insert→Charts→Column→Clustered column. Are the filed names and category names defined?
Answers to question 1-18:


Answer to question 27: Change the minimum value of GRADE_TABLE (the value in A25) to -100 (or anything smaller than -100).