



# Notre Dame University

Faculty of Engineering

Test # 1

Spring 2006

ENG 102

Friday, November 14, 2006

From 12:00 Till 13:00

Name \_\_\_\_\_

I.D \_\_\_\_\_

Section: MWF or TTH

Question1	20
Question2	25
Question3	10
Question4	15
Question5	30
Total	/100

**General directives:**

1. You have 60 minutes to complete the exam.
2. Read the instructions carefully.
3. Cell Phones are not allowed.
4. **Bonus: 5 points are applied to the exam property.**
5. Cheating or attempting to cheat will result in your dismissal from the exam hall, hence failing the exam.
6. Do not linger on a question. Move to the next one if you do not know the answer.
7. Write the answers on the question sheet.
8. Scratch: use back pages.

**\*\*\* Good Luck \*\*\***

**Problem I (20 points)**

Encircle your answers of the following questions:

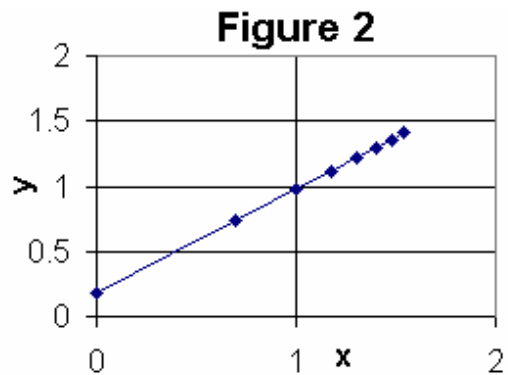
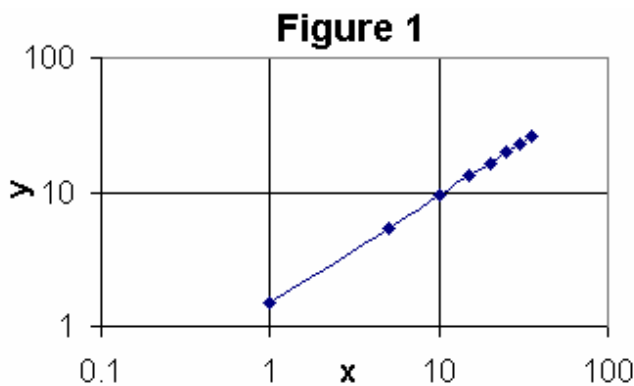
<b>N.O.A = None Of the Above</b> <b>T = True; F = False</b>
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**Note: 2 points are applied to each good answered.**

**-1 point is reduced from each wrong answered.**

**0 points is applied to each NO answered.**

- 1) The information used to generate graph of Figure 1 is same as graph of Figure 2.  
a) T                      b) F
- 2) The scale of Figure 2 is  
a) Arithmetic                      b) Semi-Log                      c) Log-Log                      d) N.O.A
- 3) The scale of Figure 1 is  
a) Arithmetic                      b) Semi-Log                      c) Log-Log                      d) N.O.A
- 4) Pie charts can show the total value for all data item.  
a) T                      b) F
- 5) To calculate the mean of cells C1 and D1 using Excel, we use  
a) =MEAN(C1:D1)                      b) =MEAN(C1,D1)                      c) =MEAN(C1;D1)                      d) N.O.A
- 6) The operator % between two cells in Excel is  
a) used to AND two cells                      b) used to calculate the percentage of two cells  
c) used to compare two cells                      d) Not Allowed                      e) used to add two cells
- 7) Microsoft Excel can open any Microsoft documents.  
a) T                      b) F
- 8) In Excel, when a Cell has (#NAME), it is mean that is a  
a) Function Error                      b) Number Error                      c) Cell Error
- 9) If Cell A1=2 and A2=1, the content of A3 (=A1<A2) and the content of A4 (=A3 \*1) is equal to  
a) 0                      b) 1                      c) 2                      c) TRUE                      d) FALSE
- 10) If Cell A1=1 and A2=2, the content of A3 (=A1&A2) \* 2 ) is equal to  
a) 1                      b) 2                      c) 12                      d) 21                      e) 24                      f) 42



**Problem II (25 points)**

Consider the following Excel Worksheet:

	A	B	C	D	E	F	G	H
1	1							
2		5						
3			10					
4				19				
5					33			
6						56		
7								E5+D4+Const
8				B2+A1+Const				
9								
10	Const=	4						
11								
12				A1+Const				

The contents of the following Cells are

$$A1=1, B2 = A1 + \text{Const}, C3=B2+A1+\text{Const} \text{ and } F6 = E5+D4+\text{Const}.$$

a) What should be the contents of cells D4 and E5?

D4 =  
and E5 =

b) Can we replace the Const cell by the equivalent address? If yes, explain?

c) What would be the value of cell C2, if C3 is copied to C2?

d) What would be the value of cell D3, if D4 is copied to D3?

e) What is the name of the reference address B10?

**Problem III (10 points)**

a) Using the appropriate Excel functions, write the appropriate equation to convert:  
100 mi/(0.5 hr) to km/min

b) Assuming the Cell  $A1 = 0.22 * \text{CONVERT}(1, "cm", "m")^3 / \text{CONVERT}(1, "sec", "hr")$   
and after execution  $A1 = 0.0008$   
Explain this result?

**Problem IV (15 points)**

Given the equation  $z = \sqrt{x} + y$ . The following table displays the values of (z) for several values of (x) and several values of (y). Different (x) values are found in cells A5 to A10, and various values of (y) are found in cells B2 to I2.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2		2	5	8	11	14	17	20	23				
3													
4	<b>x</b>												
5	5	6.414	7.236	7.828	8.317	8.742	9.123	9.472	9.796				
6	8	9.414	10.24	10.83	11.32	11.74	12.12	12.47	12.8				
7	11	12.41	13.24	13.83	14.32	14.74	15.12	15.47	15.8				
8	14	15.41	16.24	16.83	17.32	17.74	18.12	18.47	18.8				
9	17	18.41	19.24	19.83	20.32	20.74	21.12	21.47	21.8				
10	20	21.41	22.24	22.83	23.32	23.74	24.12	24.47	24.8				
11													
12													
13													
14													

Suppose that all the values have been entered into the table by filling all the cells (**i.e filling both horizontally and vertically**).

Using the same book, same worksheet and same **addresses of x** and **y**, find a method that can allow to fill all associated cells with the following equations:

$$z1 = \sqrt{5x} + 5y, \quad z2 = \sqrt{5x} + y, \quad \text{and} \quad z3 = \sqrt{x} + 5y$$

**Problem V (30 points)**

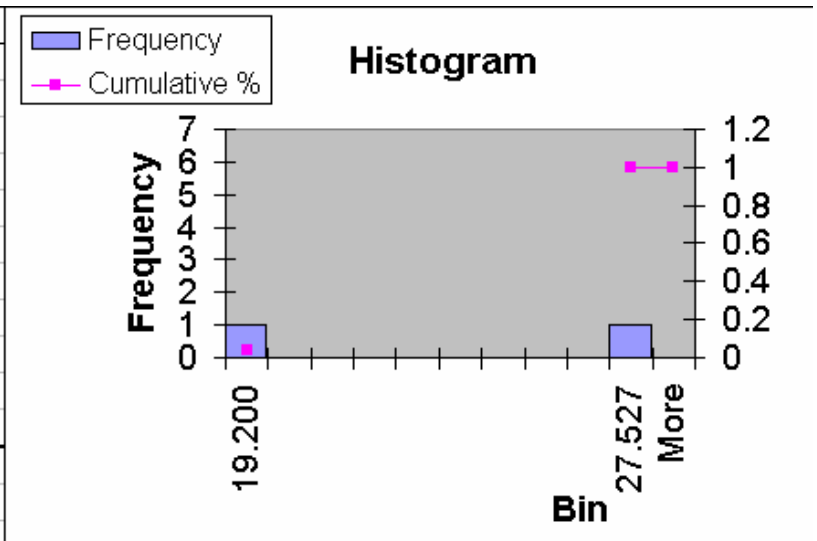
The table below represents the average fuel efficiency of late model cars equipped with V-6 engines and automatic transmissions, that the U.S Environmental Protection Agency has tested randomly. Use the information in the table below to answer the following questions:

	A	B	C	D	E	F	G
1	<b>Sample</b>	<b>Mileage</b>	<b>Sample</b>	<b>Mileage</b>			
2	1	22.9	13	25.5		a) mean	
3	2	23.9	14	22.2		median	
4	3	21.4	15	21.7		mode	
5	4	25.4	16	23.5		min	
6	5	23.9	17	27.1		max	
7	6	24.4	18	23		std deviation	1.850
8	7	23.1	19	23.9			
9	8	22	20	23.6			
10	9	25.4	21	19.2			
11	10	20.7	22	22.7			
12	11	21.4	23	26			
13	12	22.8	24	21.3			

a) Referring to Cells F2 till F7, write the functions in Cells G2 till G7? (5 pts)

b) Complete the missing information of following table and histogram, according to the above table. (10 pts)

Bin	Frequency	Cumulative %
19.200	1	4.17%
27.527	1	100.00%
More	0	100.00%



c) What should be the nearest value of

a) Mode? ( 2.5 pts)

b) Median? (2.5 pts)

d) If a car of this type is chosen at random, what is the likelihood that the fuel efficiency of this car will

1) not exceed 21 mpg? (3 pts)

2) not exceed 24 mpg? (3 pts)

3) exceed 27 mpg? (4 pts)