Quiz - The Inspector's Calc's

Answer questions on a separate sheet of paper

1. Most math mistakes are the result of:

    a. inputting the wrong numbers in the calculator.
    b. the inspector's failure to write the formula.
    c. placing the decimal point in the wrong location.
    d. the inspector's inability to use the calculator.

2. When completing a calculation, always:

    a. highlight the final answer.
    b. stand up and shout, "Can you believe it, I did it!"
    c. add the appropriate units. *(ipy, yrs, etc.)*
    d. move on to the next problem, and do ***not*** check your work.

3. A "mil" is:

    a. one-thousandth of an inch.
    b. one-millimeter.
    c. a speed used in describing corrosion.
    d. a place where wheat is ground into flour.

4. Write the formula for calculating the *Short-Term* corrosion rate.

5. Write the formula for calculating the *Long-Term* corrosion rate.

6. Write the formula for calculating the *Remaining Life*.

7. Convert the date, May 2013 to a number.

8. Convert the number 2029.75 to a date *(year and month).*

9. In March 2013, a CML was measured at 0.289". In March 2020 the same CML was measured at 0.268". Calculate the *Corrosion Rate*.

10. In October 2011, a CML was measured at 0.435". In February 2019 the same CML was 0.384". Calculate the *Corrosion Rate.*

11. Calculate the controlling *Corrosion Rate* for the following CML.

$t_{minimum}$	***Jan 2020***	***Jan 2015***	***Jan 2012***	***Jan 2010***
0.510"	***0.560"***	***0.565""***	***0.586"***	***0.600"***

12. The controlling *corrosion rate* at a CML is 0.004 ipy. The *current thickness* is 0.332" and the *retirement thickness* is 0.268". Calculate the *Remaining Life* at this CML.

13. Calculate the *Remaining Life* for this CML.

$t_{minimum}$	***Jun 2020***	***Jun 2015***	***Jun 2013***	***Jun 2003***
0.228"	***0.282"***	***0.308""***	***0.315"***	***0.320"***

14. ***API 510 students:*** For a vessel, the controlling *Corrosion Rate* is 0.006 ipy and the *Remaining Corrosion Allowance* is 0.096". Determine the *Intervals* for the *Internal* and *External Inspections.*

15. ***API 570 students:*** For a *Class 2* pipe circuit, the controlling *Corrosion Rate* is 0.006 ipy and the *Remaining Corrosion Allowance* is 0.096". Determine the *Intervals* for the *Thickness Measurement* and *External Inspection.*

16. ***API 653 students:*** For a tank shell, the controlling *Corrosion Rate* is 0.006 ipy and the *Remaining Corrosion Allowance* is 0.096". Determine the *Intervals* for the *Shell Thickness Measurement* and the *External Inspection.*

17. ***API 510 students:*** The *Remaining Life* of a vessel is 3 years. Determine the *Intervals* for the *Internal* and *External Inspections.*

18. If there are multiple CMLs on an equipment item, which CML controls the *Remaining Life* calculation?

    a. The CML with the highest short-term corrosion rate.
    b. The CML with the highest long-term corrosion rate.
    c. The CML with the overall highest corrosion rate.
    d. The CML with the lowest remaining corrosion allowance.
    e. The CML with the shortest remaining life.

Thickness Data

CML #	$t_{minimum}$	*Apr 2020*	*Aug 2018*	*May 2013*	*Jan 2005*
1	*0.380"*	*0.422"*	*0.428"*	*0.456"*	*0.480"*
2	*0.380"*	*0.433"*	*0.442"*	*0.466"*	*0.478"*

19. ***API 510 students:*** Use the above thickness data for a vessel. Determine the *Interval* and *Next Inspection Date* for the *Internal* and *External Inspections.*

20. ***API 570 students:*** Use the above thickness data for a *Class 3* piping circuit. Determine the *Interval* and *Next Inspection Date* for the *Thickness Measurement* and *External Inspections.*

21. ***API 653 students:*** Use the above thickness data for a tank. Determine the *Interval* and *Next Inspection Date* for the *Shell Thickness Measurement* and *External Inspections.*