EML 2322L Quiz 13 (11/19/19)

Answer the following questions based on the information presented in class. You can use **your** notes but do not speak with others.

Define the casting process and explain when it would be used:

List the two types of parts casting is good for:

The suitability of parts for the casting process is independent of desired quantity.

TRUE / FALSE / NOT ENOUGH INFO

Define the forging process and explain when it would be used:

List the type of parts forging is good for:

The suitability of parts for the forging process is independent of desired quantity.

TRUE / FALSE / NOT ENOUGH INFO

Rank the following materials by assigning scores between 4 (weakest) and 10 (strongest) based on their relative strengths (use 4, 7 and 10):

billet metal: _____
cast metal: _____
forged metal: _____

When working in industry what happens if we can't communicate effectively, design simple parts that can be easily manufactured, create decent part drawings, or read measuring instruments correctly?

we look _____ and lose _____ with our co-workers, bosses, and customers

There is no such thing as a dumb question in this course.

TRUE / FALSE / NOT ENOUGH INFO

There is no such thing as a dumb question once you are hired and start working for a company.

TRUE / FALSE / NOT ENOUGH INFO

Every part you design or drawing you make from this point forward is a reflection of your intelligence and design capability.

TRUE / FALSE / NOT ENOUGH INFO

A vital part of your success as a design engineer is to realize what an enormous resource those with more design and manufacturing experience can be to your professional development.

TRUE / FALSE / NOT ENOUGH INFO

The best manufacturing shops (by virtue of their success) do not need your work, so you have to convince them your parts will be easier to make than your competitors by using proven DFM techniques, clear, complete, and concise drawings, and by listening to their feedback on how to simplify your parts while achieving the desired function.

TRUE / FALSE / NOT ENOUGH INFO

EML 2322L DFM Quiz

Select the correct answer to the following questions based on the DFM information presented in class and your experience working in the lab.

Define what is meant by the phrase *design for manufacturability* (or DFM):

consciously trying to design parts that can be manufactured for the lowest _____ while meeting the required _____ intent and _____ factors.

Circle the answer that achieves the DFM goal of reducing part cost:

1. use larger / smaller part tolerances
2. use fewer / more finished surfaces
3. use coarser / finer surface finishes
4. use fewer / more dimension datums
5. use arbitrary / nominal feature dimensions
6. use stronger / weaker material
7. use tapped / thru-bolted clearance holes
8. use screw / bolt holes
9. use blind / thru holes
10. specify cone-bottomed / flat-bottomed holes
11. make the part larger / smaller
12. design parts for min / max raw-stock removal
13. design parts to use larger / smaller cutting tools
14. design parts to use cutting tools with larger / smaller L:D ratios
15. design parts around custom / standard cutting tool sizes
16. design parts with / without chamfers and fillets
17. avoid / use mirror image parts
18. use clearance / line fits for fasteners holes
19. always / never design OTS parts
20. specify slots or pockets with round / square corners when using traditional mfg. equipment
21. consider / ignore room for assembly tools
22. always place fastener threads in shear / tension
23. use fasteners / pins for locating parts with respect to each other
24. specify (8) ¼-20 UNC threads in aluminum / (8) ¼-28 UNF threads in steel / either
25. specify (8) ¼-28 UNF threads in steel / (8) ¼-28 UNF threads in titanium / either
26. specify (8) ¼-20 UNC threads in aluminum / (8) 4-40 UNC threads in aluminum / either
27. specify (8) ¼-28 UNF threads in steel / (4) 2-64 UNF threads in aluminum / either
28. specify (8) ¼-20 threads in aluminum / (8) M6x1.0 threads in aluminum / either
29. specify (8) ¼-20 UNC threads in aluminum / (8) 1/2-13 UNC threads in aluminum / either