Quiz for IDS.332J and IDS.333

October 15, 2020

Nature of Quiz:

This is an "open-book" quiz. As it would be in professional practice, you can seek out and obtain answers from your notes, texts, the web, friends, etc.

The questions concern the range of concepts, ideas, and associated conclusions we have been exploring in class. You are not required to do any calculations.

Your answers must be in your own words, your own terms. Put another way, you should demonstrate your ability to express the answers yourself, to show that you have "internalized" the concepts.

Some, perhaps many of you, will have prepared basic answers in advance, rather as political candidates do in preparation for a debate. That is perfectly OK. Getting you to develop your understanding of the concepts is indeed the object of the course.

As stressed in the Quiz Review, responses phrased in exactly the same way as some other student, or taken directly from a text, will not be given credit. The quiz is to validate your personal understanding, that you can express in your own way.

Suggestion:
You can answer questions in any order. You might scan them before you start.

**I've enjoyed and appreciated the opportunity to become acquainted with you!
All best wishes -- Richard**

Question 1.
How do you interpret the claim that "The forecast is 'always' wrong"? Obviously, some forecasts are correct at some time, even many times.
So, what is the meaning of this statement?
What are the limitations to this claim?
Why might it be a good starting point for the course?

Question 2.
What's the "Flaw of Averages"? Give an example.
What implication does it have on the desirability of any standard deterministic analysis of the design and management of systems?

Question 3.
One view is that the Discount Rate should represent the Opportunity Cost of Capital.
Explain the concept of "opportunity cost of capital."
Then discuss why the Discount Rate should (or should not) equal this Opportunity Cost.

Question 4.
The Value of a project plan obtained from a deterministic analysis often does not equal
        the value obtained from an analysis that takes uncertainty into account.
Explain why and how this can occur.
Are valuations under uncertainty ever systematically more or less than deterministic
estimates?
If so, what's the explanation?
Are there systematic exceptions to this observation? How might these occur?

Question 5
What – if anything -- do "Economies of Scale" have to do with Flexibility in Design?
Start by explaining the meaning of Economies of Scale – and give an example.
Then explain how Economies of Scale have an effect – if any – on the desirability of
Flexibility.

Question 6
What's the effect – if any – of higher Discount Rates on the desirability of Flexibility in
Design?
Provide an intuitive explanation of why your explanation makes sense.
While you're at it, how does the concept of "Learning" fit into this?

Question 7
In an uncertain world, it seems reasonable that "Information has value". It's not too hard to imagine how to estimate the cost of getting data, but how can we estimate the "Value of Information"?
And what's this idea about "Perfect Information" – nothing's "perfect"!
Why is Perfect Information of any use?
How might we make use of it?

Question 8
Tell me about how Decision Analysis works. Specifically:
Does it tell me what to do? Or just provide information?
On what basis does it provide guidance?
Is it easy to apply to a complex problem with many choices over 5 or more stages?

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Question 9
Help me think about the concept of a "Target Curve".
What does it show me?
Does this relate to "Multidimensional Evaluation"? How does that work?
Can I use target curves to optimize System Design and Management?

Question 10
Compare and contrast "Decision Analysis" and "Excel-based Simulation Analysis."
What are the relative advantages of each approach?
Give examples of when it might be best to choose Decision Analysis?
To use Excel-based Simulation Analysis?