University of Toronto
Faculty of Applied Science and Engineering
APS112 and APS113Engineering Strategies and Practice

Quiz #2
April 7, 2016
50 minutes

This is a 50-minute quiz. The quiz is closed book and closed notes. The quiz has a total of 18 questions, worth a total of 30 marks. The questions are divided between two booklets.

Question Booklet #1 – Multiple Choice Question Booklet

This booklet contains 15 multiple-choice questions, worth 1 mark each. Read each question thoroughly and provide the answer on the answer sheet (not in this booklet). Fill in your name and student number on the multiple-choice answer sheet. When providing answers on the answer sheet be sure to:

- use a pencil or pen
- fill out the answer sheet (scan sheet) clearly with no overlaps
- erase any errors completely
- **provide only the single, most correct answer for each question**

There is no penalty for wrong answers. Select the answer that best satisfies the question.

You are not required to hand in this multiple-choice question booklet.

The final 3 short-answer questions are found in the Short Answer Question Booklet.

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1) A project is “Fast Tracked”. This means
   a) Giving bonuses or other incentives to any task finished ahead of schedule
   b) Carefully designing tasks to take the shortest time possible
   c) All slack in the project is eliminated
   d) Some planning/design goes on while other parts of the project are executed

2) Why is it important to have project closure?
   a) Final calculation of costs and comparison with initial estimates
   b) Consideration of additional work for this client
   c) Time for individual reflection on mistakes and inefficiencies that can be corrected for the next project
   d) All the above

3) You have invented a new type of pogo stick (a bouncing toy) that relies on a magnetic spring arrangement. You describe this to your friend who publishes an article describing the invention in the school paper. You can still file a patent application:
   a) In every country except the one where the publication was printed.
   b) Anywhere because a school paper does not count as a public disclosure.
   c) As long as you invented the mechanism prior to the article appearing.
   d) Anywhere provided the article does not have enough detail to enable someone else to build the new mechanism.

4) An industrial designer would be hired to:
   a) Consider the design of entire factories at the system level.
   b) Design the non-functional look and feel of a new bicycle helmet to increase sales.
   c) Do detailed calculations needed to construct an efficient piston pump.
   d) Write utility patent applications to protect new designs.

5) Which of the following statements is **FALSE**?
   a) The bathtub curve is based on the principle that the failure rate per unit time is highest at the beginning and end of a product’s use.
   b) Quality Engineering is principally concerned with achieving the most durable product possible.
   c) Using an inexpensive and easily accessed sacrificial part is an example of design for maintenance.
   d) Quantitative Reliability Engineering assumes that there is a distribution of loads and materials properties rather than single values of these things.

6) In a simple Pugh Selection process:
   a) A single reference design is chosen at the beginning and used throughout the process.
   b) The result is a numerical ranking of various design alternatives.
   c) The process is essentially the same as for a weighted decision matrix.
   d) The objective weighting is not accounted for.

7) A team has been given the project of helping a bike-sharing organization increase its ridership and revenue. They have determined that the functional basis of the project is to convey information. They have defined their first primary function as “increase revenue.” This is incorrect because it is not a function, it is a(n)…
   a) Human Factor.
   b) objective.
   c) result.
   d) constraint.

8) Oral presentations in Engineering allow you to
   a) provide extensive detail and explanation of your whole document.
   b) establish a human relationship with your audience and trust in your project.
   c) demonstrate your advanced ability through the use of professional jargon.
   d) provide both written and oral information with slides you read off of.

9) A Use Case describes
   a) a technology at a specific point in its use.
   b) how one system is embedded in another.
   c) a variety of interactions between a user and a system.
   d) the sequence of commands when two systems work together.

10) Reflective thinking is
   a) justifying a decision in relation to metrics unique to the situation.
   b) determining how to best balance the needs of stakeholders.
   c) understanding multiple perspectives in a design project.
   d) assessing yourself or team and strategizing improvements.

11) In the CRAAP research method, the letters stand for:
   a) Currency, relevance, authority, accuracy and purpose
   b) Combine, re-use, analogy, adapt and put to another use
   c) Collect, review, analyse, adapt and paraphrase
   d) Compose, record, abstract, associate and publish

<<Questions 12-15 continue on the next page>>

Questions 12-15 refer to the chart in Figure 1.

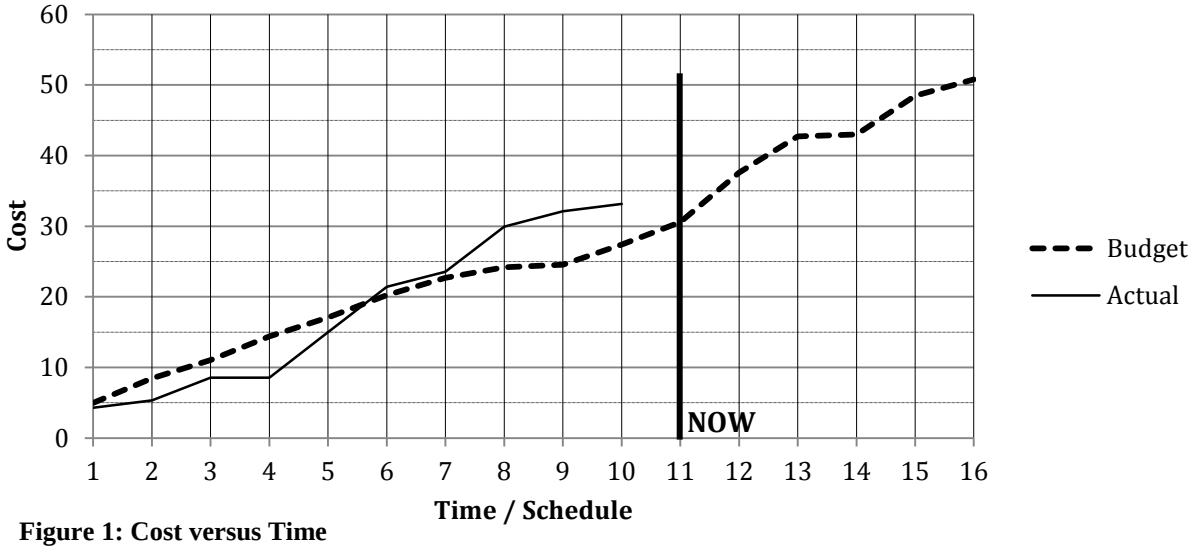

Figure 1: Cost versus Time

The dotted line is the budgeted cost as the project goes through the proposed schedule of tasks. The thinner solid line tracks the actual costs that have been incurred as the tasks have been completed. The thicker solid line labelled NOW indicates the place on the proposed schedule where the project should be.

12) The project is
   a) On time, on budget
   b) Behind time, over budget
   c) Ahead of time, over budget
   d) Behind time, under budget

13) The Actual Cost of Work Performed would be closest to:
   a) 52
   b) 34
   c) 30
   d) 27

14) The Schedule Variance would be closest to:
   a) -7
   b) -4
   c) -15%
   d) A positive number

15) If the rest of the project went as planned, the project will end:
   a) at 16, costing 51 (as shown by the end of the dotted line)
   b) at 17, costing 56
   c) at 15, costing 47
   d) at 15, costing 56