University of Toronto
Faculty of Applied Science and Engineering
APS112 and APS113 Engineering Strategies and Practice

Quiz #1 February 12, 2016

This is a 50-minute quiz. The quiz is closed book and closed notes. The quiz has a total of 19 questions, worth 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
- 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.

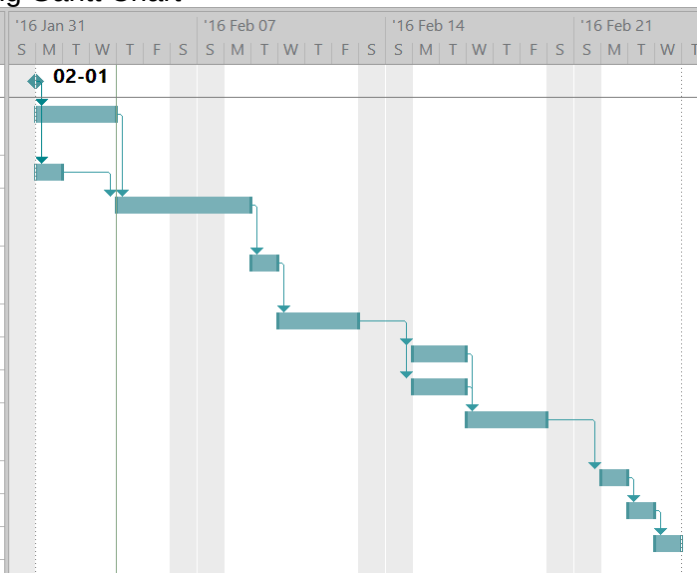
The final 4 short-answer questions are found in the Short Answer Question Booklet.

1) Which is **TRUE** concerning the management and technical aspects of a project?
   a) Project Management starts before and ends after the technical aspects.
   b) Project Management starts at the same time as and ends after the technical aspects.
   c) Project Management starts and ends at the same time as the technical aspects.
   d) The start and end of Project Management are unrelated to the technical aspects.

2) Which of the following is the best-formed task for a project management plan?
   a) Build a set of cabinets and let me know when you are done.
   b) Nail up the board.
   c) Solder the components into the prototype circuit board.
   d) Program a routine to select the largest item from the list, then archive the software.

QUESTIONS 3-5 are based on the following Gantt Chart

	Task Name	Duration	Predecessors
1	Start basement reno	0 days	
2	Clear items out of work area and store away	3 days	1
3	Get building permit	1 day	1
4	Break up existing concrete floor	3 days	3,2
5	Dig new bed for drain pipes	1 day	4
6	Put in sand underlay	3 days	5
7	Put in drain pipes	2 days	6
8	Put in water pipes	2 days	6
9	Put concrete floor on top	3 days	7,8
10	Paint concrete floor	1 day	9
11	Move back items stored	1 day	10
12	Basement reno done	1 day	11



3) What is the effect of changing task 9 to “e days” duration instead of “days”?
   a) Project will take longer.
   b) Task 9 will be run on the weekend.
   c) Task 9 will be removed from the critical path.
   d) There will be no change.

4) If task 12 is changed to a milestone, what happens to the timeline of the project?
   a) The project will be done one day earlier.
   b) The project will take the same amount of time, but the representation for task 12 will change.
   c) An error will be generated on the resource sheet.
   d) There will be no change.

5) <u>Working with the original Gantt Chart</u> (not as revised by any other question): If tasks 7 and 8 are done by the same person, then “leveling” this project will result in the project ending on:
   a) Wednesday, same as now.
   b) Thursday (1 day later)
   c) Friday (2 days later)
   d) Tuesday (6 days later)

6) What statement is **TRUE**?
   a) Estimates are used only by non-engineers since engineers calculate exact values.
   b) Estimates must always be calculated to the best precision possible.
   c) Estimates are only useful for preliminary calculations and do not serve any purpose once exact calculations have been completed.
   d) None of the above.

7) The Occupational Health and Safety Act in Ontario provides supervisors with some responsibilities. Which of the following is **NOT** a responsibility of a competent supervisor?
   a) Ensure that procedures are followed and that protective devices are used.
   b) Advise a worker on the presence of any danger.
   c) Take every precaution reasonable in the circumstances for the protection of the worker.
   d) Eliminate all hazards from the workplace.

8) In searching for prior art informing your design, which statement is **FALSE**?
   a) Reviewing the literature should be done by starting with the most detailed and specific references you can find.
   b) Prior art includes all information relevant to a design problem.
   c) Designers should review prior art before embarking on the main creative design process.
   d) It is important to know about codes and standards applying to design problem.

9) A student team has been given a project to increase membership in a bike sharing program. They have determined the gap is that when riders are riding they do not know the location of the nearest drop-off station. They have determined the Functional Basis for the design is:
   a) Increase membership
   b) Transmit information
   c) Move mass
   d) Generate energy

10) A team has to prevent a male robin from seeing his own reflection and attacking it in a large window. Which of the following functions would be appropriate for the team?
   a) Minimally reflective – less than 8% specular reflectance
   b) Prevent robin from seeing his reflection in the glass
   c) Design shall not harm wildlife or ecosystem
   d) Reduce specular reflectance of the glass

11) Faced with the problem of a male robin attacking his own reflection in a large window, a team has determined that one objective of their design would be durability. Which of the following objective goals would be appropriate for the team?
   a) Robin will not be able to break the glass when flying at their top speed, 57.9364 km/hr.
   b) Design will last at least 7 years without deterioration in Canadian weather conditions.
   c) Design will resist deterioration under temperature cycling between -23.8ºC and 29.4ºC.
   d) Deterioration will not significantly affect the window to which the design is attached.

12) In a Conceptual Design Specification (CDS), alternatives
   a) Must all be equally valid, though they represent different trade-offs
   b) May be combined to form the recommended design
   c) Should have one clearly superior design and four others
   d) Must be written by only a single team member, with no collaboration

13) Which of the following statements, about Engineering Notebooks, is **TRUE**?
   a) Format does not matter, because the Engineering Notebook, like a personal journal is *for your eyes only.* No one else will read it.
   b) Engineering Notebooks are only used in ESP as a teaching tool; they are never used by professional engineers. But they are useful, nonetheless.
   c) If you had to leave a project or a year and then return to it, you should be able to quickly get back up to speed by reading your Engineering Notebook.
   d) Minutes, task delegation and important discussion points are NOT for your Engineering Notebook. The meeting note-taker takes them and keeps them.

14) Using “common sense” as evidence for a claim is:
   a) A good idea because it saves time on research, especially when all you do in research is find someone who supports your own idea
   b) A bad idea because your own common sense is at least partially defined by your own bias and so it is not, ultimately, objective
   c) A good idea because it is a way of practicing becoming a professional who has to use common sense all the time
   d) A bad idea because it may lead to arguments, but if the team agrees, then it may not be a bad idea after all

15) Service environment provides:
   a) Stakeholder interests which help balance the bias of the team, client and users
   b) A view of the project from the perspective of the design itself
   c) All elements that might typically be present where the design is going to operate
   d) A set of principles to design for a broad range of users