

ORDRE DES INGÉNIEURS DU QUÉBEC  
May 2015 SESSION

Open book examination  
**No electronic device authorized**  
Duration : 3 hours

**14-LO-A6 Software Process**  
This exam has five (5) questions

**1. Concepts (20%) (5X4%)**

Define each of the four (4) following concepts by identifying their objectives, their main components and what are their relationships within a software project.

- A) Life cycle
- B) Software Process
- C) Project Management
- D) Quality Assurance
- E) Software standards

**2. Use of standards (10%)**

The Standard ISO 12207 recommends four (4) artifacts to define a Quality Assurance (QA) process. Given a small QA team of 3 people working for a young company with limited resources, it will be difficult to take into account all of recommended artefacts. For each of these four artifacts justify your choice to keep or reject it and describe how the selected artefacts will be used in the QA process.

**3. Agile or disciplined approach (20%) (4X5%)**

For the following three software development contexts, say if an agile (incremental, transformational, etc.) or disciplined (spiral, waterfall, etc.) approach would be more appropriate and justify your choices.

- A) Team members often change and where it is difficult to do project monitoring;
- B) Project involving several clients who have different product perspectives;
- C) Project requiring teams distributed across multiple sites across the world.
- D) Large software project involving a variety of users

#### **4. Process Modeling (35%) (5X7%)**

Design a maintenance process, following the notation SPEM 2.0 (UPEDU), to meet the following objectives:

- A) Receive reports of problems related to the use of the software.
- B) Validate the problem, and confirm that the problem is software related.
- C) Correct the problem.
- D) Verify and validate the corrected component
- E) Deploy the component.

#### **5. CMMI (15%)**

A large software development project requires a CMMI certification level 3. What are the software engineering process domains that could be audited to comply with the certification and how many specific practices could be validated?