ORDRE DES INGÉNIEURS DU QUÉBEC
SESSION NOVEMBER 2020

Toute documentation permise Calculatrices : modèles autorisés seulement Durée de l'examen : 3 heures

14-EC-3

SUSTAINABILITY, ENGINEERING AND THE ENVIRONMENT.

This exam consists of 4 independent questions.

1- Many companies around the world have chosen to implement an ISO 14001 Environmental Management System (EMS). Although the implementation of an EMS does not mean that the company no longer pollutes, such a system requires compliance with all environmental laws. (25%)

1-a) What are the main steps in setting up an EMS aiming for ISO 14001 certification? (20%)

1-b) What are the minimum obligations of a company aiming for ISO 14001 certification? (5%)

2- In order to assess the environmental impacts during the product design process, the engineer has a powerful tool: environmental life cycle analysis (LCA). This tool allows engineers to design products considering sustainable development. This also allows the engineer to achieve Environmental Product Declarations (EPD) (25%)

2-a) Life cycle analysis (LCA) is used as part of the environmental product declaration (EPD). Briefly explain the link between LCA and EPD (10%).

2-b) Using specific and precise terminology, describe the main steps in performing an LCA? (15%)

3- Compliance with environmental laws is an imperative for any business. (25%)

What are the two main environmental laws to which any business operating in Quebec is subject? Briefly present them. (25%).

4- General knowledge and reflections on sustainable development. The concept of sustainable development was officially recognized at the Earth Summit held in Rio de Janeiro in 1992. From this summit were born the founding principles in sustainable development that have influenced tools for sustainable engineering. (25%)

4-a) Introduce two important principles of sustainable development. (Origin, statement, objective…) (10%).

4-b) Present and describe a tool (it can be a standard, a methodology, an approach) available to the engineer to operationalize sustainable development in a company (name of the tool, description, utility, etc.) (15%).