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**NATIONAL EXAMS MAY 2007**

**04-Env-B1, Environmental Assessment and Management Systems**

**3 hours duration**

**NOTES**

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.
2. This is a CLOSED BOOK EXAM.
3. The Casio or Sharp approved non-communicating calculator are permitted. Note that you must indicate the type of calculator being used. Write the name and model designation of the calculator, on the first inside left hand sheet, of the exam work book.
4. Any five (5) questions constitute a complete paper. Only the first five (5) answers as they appear in your work book(s), will be marked.
5. Each question is equally weighted at twenty (20) points for a total of a possible one-hundred (100) points for a complete paper.

## Problem 1

Provide answers to the following questions related to *analysis of environmental impacts using technical and non-technical parameters* and *applicable federal, provincial or territorial environmental legislation*:

- (7) (i) Identify and briefly discuss two pre-impact phases and one post-impact phase of an environmental impact assessment that can identify key stress areas for appropriate action.
- (7) (ii) Describe two *impact indicators* from an environmental impact analysis and show how they may be used to determine the impacts on the atmosphere due to transportation intensification.
- (6) (iii) Describe an existing federal or provincial/territorial environmental legislation and how it prevents or minimizes negative environmental impacts.

## Problem 2

Provide answers to the following questions related to following areas: *environmental impact assessment applied to solid waste management, effluent control, air pollution control and urban development*:

- (6) (i) List and describe three key steps involved in conducting an environmental impact assessment related to a solids waste management site.
- (6) (ii) Briefly describe two approaches or models (mathematical or conceptual) that you would use to make impact predictions related to urban intensification.
- (iii) Describe the importance of the the following terms:
  - (2) (a) Critical control points (CCPs)
  - (2) (b) Surface water mixing zone
  - (2) (c) Acute toxicity of effluents
  - (2) (d) Ambient air quality standard

### Problem 3

Answer the following questions related to *environmental audits*, *geographical information systems (GIS)* and *environmental management systems (EMS)*:

- (6) (i) Briefly describe the key objectives of an environmental audit and explain how the potential benefits can offset the costs.
- (6) (ii) Briefly describe three key elements of a geographical information system (GIS) and how GIS can facilitate a typical application of an environmental management system.
- (8) (iii) Briefly describe the elements of the environmental management systems (EMS), explaining the interactions between the different elements and the importance of these interactions to the success of an EMS.

### Problem 4

Provide answers to the following questions related to *principles of sustainable development* and *protection of natural resources for sustainable development*:

- (8) (i) Briefly describe how the general principles of sustainable development may assist in ensuring equitable use of resources.
- (ii) Briefly explain the similarities or differences between each of the following paired terms:
  - (3) (a) Objectives and goals
  - (3) (b) Operational procedures and emergency response plans
  - (3) (c) Nonconformance and compliance
  - (3) (d) SOPs and critical control points

### Problem 5

Provide answers to the following questions related to *ISA 14000/14001 Standards, resource problems and design* with consideration of *ecological, economic, demographic and social dimensions*:

- (10) (i) Describe four advantages and two disadvantages faced by an automobile assembly plant in completing an ISO 14001 registration, assuming it has already completed ISO 9000 registration.
- (10) (ii) Explain how an environmental impact assessment (EIA) may assist in predicting and addressing design, resource, ecological, economic, demographic and social problems.

### Problem 6

Provide answers to the following questions related to *techniques to integrate knowledge and define policy, risk analysis, life cycle analysis and risk management*:

The CEO of *Metalika*, a steel making company, has promised its shareholders that the company will meet its new environmental objectives to reduce energy consumption, reduce carbon dioxide emissions, use less raw materials and utilize eco-efficient construction methods within the next five years. You have been asked by the CEO to prepare a technical report to explain how the company will improve its ability to meet its objectives by:

- (5) (i) Knowledge based operational policy change
- (5) (ii) Risk analysis
- (5) (iii) Life cycle analysis
- (5) (iv) Risk management

## Marking Scheme

1. (i) 7, (ii) 7, (iii) 6 marks, 20 marks total
2. (i) 6, (ii) 6, (iii) (a) 2, (b) 2, (c) 2, (d) 2 marks, 20 marks total
3. (i) 6, (ii) 6, (iii) 8 marks, 20 marks total
4. (i) 8, (ii) (a) 3, (b) 3, (c) 3, (d) 3 marks, 20 marks total
5. (i) 10, (ii) 10 marks, 20 marks total
6. (i) 5, (ii) 5, (iii) 5, (iv) 5 marks, 20 marks total