1. DESCRIPTION OF EXAMINATION ROUTE

1.1 PREAMBLE

Provincial and territorial Associations/Ordre of Professional Engineers are responsible for the regulation of the practice of engineering in Canada. Each Association/Ordre has been established under an act of its provincial or territorial legislature and serves as the licensing authority for engineers practising within its jurisdiction. Engineers Canada is the national federation of these Associations/Ordre. Engineers Canada provides a coordinating function among the provincial and territorial Associations/Ordre, fostering mutual recognition and encouraging the greatest possible commonality of operation in their licensing functions.

Engineers Canada issues guidelines on various subjects as a means to achieve coordination among its constituent member Associations/Ordre. These guidelines are an expression of general guiding principles that have a broad basis of consensus, while recognizing and supporting the autonomy of each constituent Association/Ordre to administer its Engineering Act. Engineers Canada guidelines enunciate the principles of issues but leave the detailed applications, policies, practices, and exceptions to the judgement of the constituent associations.

The Canadian Engineering Qualifications Board, a standing committee of Engineers Canada, provides a number of services to the constituent associations including the maintenance of national guidelines on admissions criteria, a uniform syllabus of examinations for use in assessing non-accredited academic program graduates, research on foreign qualifications, and other recommendations on professional practice issues. Regarding academic qualifications, its mandate is focused on programs delivered outside of Canada that are not recognized by the Canadian Engineering Accreditation Board.

1.2 INTRODUCTION

Applicants who seek registration as professional engineers in Canada must meet the admission requirements set out in the Engineers Canada Guideline on Admission to the Practice of Engineering in Canada (the Admission Guideline) that was developed by the Canadian Engineering Qualifications Board.

This 1998 Edition of the Examination Syllabus (2007 revision) issued by the Canadian Engineering Qualifications Board deals with the first of the admission requirements - Academic Qualification - and in particular, with Section 2.2 of the Admission Guideline – The Examination Program for Holders of Degrees Non- Canadian Engineering Accreditation Board Recognized Programs.

1.3 ACADEMIC QUALIFICATION

The academic qualification required for professional engineering registration with a constituent Association/Ordre is graduation from an engineering program accredited or recognized by the Canadian Engineering Accreditation Board or successful completion of an examination program based on the Canadian Engineering Qualifications Board Examination Syllabus. The flow chart in Figure 1 shows the various routes for meeting the academic qualification.

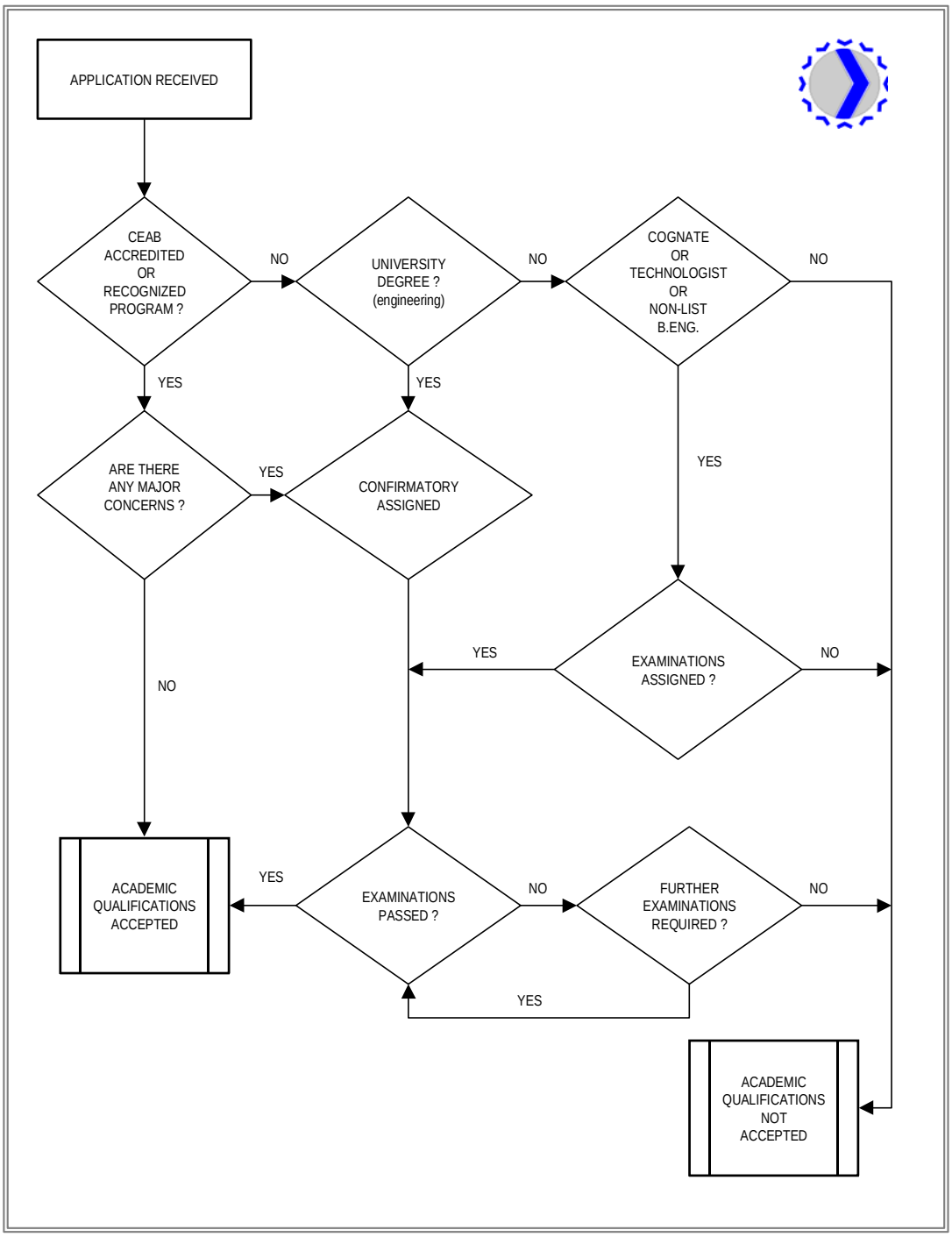

Figure 1: Canadian Engineering Qualifications Board - Assessment of Academic Qualifications

Individuals who have not completed an accredited or recognized engineering program but wish to obtain professional registration may be eligible to enter a constituent Association/Ordre examination program. To enter the examination program, candidates are required to have the necessary basic calculus, computer, physics, and chemistry courses equivalent to a first year engineering university program or, in Québec, a second year Pure and Applied Sciences CEGEP program.

The examination program includes the Basic Studies, Complementary Studies, and Discipline Examinations. The examinations are based on this Canadian Engineering Qualifications Board Examination Syllabus that sets out guidelines on their content and implementation. Candidates may be required to complete all or part of the examination program, at the discretion of the constituent association.

The Syllabus is designed to evaluate the academic qualifications of graduates of non-accredited engineering programs for admission to the practice of engineering in Canada. Typically, candidates who have an engineering degree will be required to complete examinations from the appropriate discipline section only and complementary studies examination if not covered in their education. Candidates may be assigned any number of examinations based on the decision of the Association/Ordre. This is referred to as a confirmatory examination program administered for the sole purpose of confirming the existing knowledge of the candidates.

Candidates who do not appear to have an engineering degree (e.g., natural scientists or technologists), or have substantial deficiencies in their engineering degree program, are expected to be assigned an examination program based on a detailed review of their academic history.

The subject matter of the syllabus is broadly representative of accredited programs offered in Canada. It is not intended, however, to duplicate any given program or establish mandatory subjects that must be mastered in each discipline. The Canadian Engineering Accreditation Board criteria for accreditation of engineering programs allows for significant flexibility in course content and it is not possible to develop a syllabus for an “average” program in any given discipline. The syllabus, therefore, does not establish a set of examinations that replicates a Canadian Engineering Accreditation Board accredited program. Although attempts have been made to harmonize the Syllabus with the Canadian Engineering Accreditation Board accreditation criteria, strict compliance has not been sought. The Syllabus is not intended as a replacement for the education process.

The Canadian Engineering Qualifications Board’s intent in the application of the Syllabus is that it be used as a sampling technique to ensure that applicants have an appropriate breadth and depth of knowledge and mastery of common subjects to confirm that they have reached the necessary academic standing. Breadth in the education of a candidate may come from more than one discipline, and thus confirmatory examinations may be drawn from more than one discipline.

1.4 SYLLABUS

Examinations in the 1998 edition of the Examination Syllabus (2004 revision) are grouped into the following numbered sections:

- Basic studies examinations;
- Complementary studies examinations; and,
- Discipline examinations.

1.4.1 Basic Studies Examinations

There are sixteen Basic Studies Examinations, designed to ensure that applicants have an adequate foundation in mathematics, basic sciences, and engineering sciences. The particular set of examinations that a candidate will be assigned depends on the candidate's discipline.

1.4.2 Complementary Studies Examinations

There are three Complementary Studies Examinations: Engineering Economics; Engineering in Society — Health, Safety, and the Environment; and Management Concepts for Engineers. This section also includes an Engineering Report that may be assigned to test a candidate's ability to present a problem, an observation, or idea, and to analyze it logically and draw conclusions or make recommendations.

1.4.3 Discipline Examinations

The following disciplines are included:

- Agricultural/Biosystems/Bioresource/Food Engineering
- Biomedical/Biochemical Engineering
- Building Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Physics
- Environmental Engineering
- Forest Engineering
- Geological Engineering
- Geomatics Engineering
- Industrial Engineering
- Marine Engineering
- Mechanical Engineering
- Metallurgical Engineering
- Mining and Mineral Processing Engineering
- Naval Architectural Engineering
- Petroleum Engineering
- Software Engineering
- Structural Engineering

The subject areas in each discipline are listed under two headings — compulsory and elective. Most full examination programs consist of six examination papers from the compulsory list and three examination papers from the elective list, although, there are exceptions to this format.