

Professional Practice Examination

Reprint – August 2017

ASSOCIATION OF PROFESSIONAL ENGINEERS OF ONTARIO

PROFESSIONAL PRACTICE EXAMINATION – August 12, 2017

PART “A” – Professional Practice and Ethics

You will be given a total of **90 minutes** to complete this examination.

Use the correct colour-coded Answer Book for each part, place in the correct envelope and **seal after completed**.

White Answer Book for Part A white question paper.

Coloured Answer Book for Part B coloured question paper.

This is a “**CLOSED BOOK**” examination. **No** aids are permitted other than the excerpts from the 1990 Ontario Regulation 941 covering sections 72 (*Professional Misconduct*) and 77 (*Code of Ethics*) supplied at the examination. Dictionaries are **not** permitted.

The marking of questions will be based not only on academic content, but also on legibility and the ability to express yourself clearly and correctly in the English language. If you have any doubt about the meaning of a question, please state clearly how you have interpreted the question.

All **four** questions constitute a complete paper for Part “A”. Each of the four questions is worth 25 marks.

Any similarity in the questions to actual persons or circumstances is coincidental.

WHERE A QUESTION ASKS IF A CERTAIN ACTION BY AN ENGINEER WAS ETHICAL OR NOT, A SIMPLE “YES” OR “NO” ANSWER IS NOT SUFFICIENT. YOU ARE EXPECTED TO COMMENT ON AND DISCUSS THE ACTION OF THE DIFFERENT INDIVIDUALS AND/OR ORGANIZATIONS INVOLVED IN EACH SITUATION.

You should identify where applicable the appropriate clauses in Regulation 941. **SIMPLE REFERENCE TO THE APPROPRIATE CLAUSES WITHOUT A DISCUSSION OF HOW THE CLAUSE APPLIES IN THE SITUATION DESCRIBED IS NOT SUFFICIENT.**

Question 1

Part A – PPE, August 12, 2017

A only

Page 1 of 4

- (5) (a) A P.Eng. has publically criticized a fellow P.Eng. contrary to [77.7.iii]. What consequences might he face? Explain.
- (5) (b) In order to be designated as a “Consulting Engineer” one must meet a number of requirements. Briefly list three of them. What additional privileges or rights are granted by this designation?
- (5) (c) Where a licence, certificate of authorization, temporary licence, provisional licence or limited licence is revoked or cancelled what should the holder do with the certificate and seal?
- (5) (d) Can limited licence holders call themselves professional engineers? Explain..
- (5) (e) PEO is authorized to discipline its members, licensees and holders of Certificate of Authorization. Give a brief outline of the Association's disciplinary process.

Question 2

Compound, P.Eng. an independent practitioner with a Certificate of Authorization, was engaged by Eng Inc. an engineering firm to perform a conceptual design and prepare drawings for a fully-automated high-temperature and low-pressure reactor system in accordance with the existing safety regulations. Upon completion of the work, Compound affixed his seal with his signature and the date on the original drawings and the drawings were turned over to Zeus P.Eng. the project manager of Eng Inc.

Compound was later retained to inspect the fabricated reactor facility and found that many crucial aspects of his original design had been ignored.

- (10) a) Discuss the situation in turning over the drawings, including Compound's actions and professional responsibility.
- (15) b) What specific steps should Compound now take?

Use the Codes of Ethics and Professional Misconduct as your guides

Question 3

You are a Consulting Engineer and are the sole owner of a civil engineering business with all the necessary licences. Your business employs no other professional engineers.

Although your business keeps you quite busy, you find time to devote to several charitable organizations. One of these organizations is a national agency that provides services to physically impaired persons to help them find ways to lead more satisfying lives. You serve on the board of directors of the agency voluntarily and have done so for several years. You are not paid for serving on the board.

The agency has recently leased a new building for its national headquarters. Before moving in, the agency intends to make some improvements to the building. One of these improvements is the construction of a ramp to provide for wheelchair access. Except for the ramp, all of the other improvements are aesthetic in nature and do not require any engineering input.

At a recent meeting of the board of directors, the board discussed hiring an engineer to design the ramp. During the meeting, one of the board members reminded everyone that you are an engineer and suggested that you should volunteer your design services. This would save the agency money that it could otherwise use to provide services to impaired persons. It is suggested that you shouldn't have any problem finding the time to donate because the ramp project would be small and would require merely a simple design. Under this gentle pressure, you agreed to undertake the design for free.

You discuss the ramp project with a recent civil engineering graduate you have hired and direct her to prepare the design as part of her regular employment. She is paid by you as part of her ongoing work. The graduate ends up doing most of the work. Due to your busy work schedule you can only briefly review the design before sealing it with your signature and date.

After all of the improvements are made to the new headquarters, the agency hosts a fundraising dinner celebration and you are invited. During the dinner, a number of speeches and presentations are given. You are surprised when the agency presents you with a bottle of fine wine as a token of appreciation for the excellent design you prepared. You stand up to accept the award and say a few words of thanks.

Using the Codes of Ethics and Professional Misconduct as your guides discuss the following, giving any consequences you might suffer from PEO.

- (10) (a) Is it appropriate for you to undertake the design?
- (10) (b) Is it appropriate for you to engage the help of the graduate?
- (5) (c) Is it appropriate for you to accept the award? Is there anything else you should do when accepting the award?

Question 4

Black, P.Eng., is employed by a municipality in Ontario as head of the municipality's procurement department. Black's responsibilities include establishing procurement policies and procedures for the municipality as well as participating in the bid selection and contracting process.

The municipality is currently considering hiring a company to design and build a wastewater treatment facility. The municipality's staff has prepared a draft Request for Tenders for the project. Before it is issued to prospective bidders, it is reviewed by Black. Black is generally satisfied with the draft and makes only a few revisions, including revisions to the scoring formula used to select the winning bidder. The current formula awards points based on price and compliance with various technical requirements in the Request for Tenders. According to Black's revisions, up to 10 points could be awarded based on the amount of experience the bidder has in designing and building such projects, and local bidders would receive 10 points automatically.

Black chairs a committee charged with evaluating, scoring and selecting the winning bidder. Of the bids received, ABC and XYZ received the most points from the committee as described in the table below:

	Possible Points	ABC's Score	XYZ's Score
Technical	40 points	35 points	35 points
Price	40 points	28 points	40 points
Experience	10 points	10 points	3 points
Local Bidder	10 points	10 points	0 points
Total	100 points	83 points	78 points

Although ABC and XYZ have similar experience, XYZ was awarded only 3 points for experience because, according to statements made by Black at the committee, XYZ's engineers had produced a poor design on one of its previous projects. In addition, ABC was the only local bidder. The committee informed ABC that it had won the job.

Later that evening, Black was treated to a celebration dinner at an expensive restaurant by White. Black is married to White, the president of ABC.

- (15) (a) Discuss Black's conduct, identifying any consequences from PEO.
- (10) (b) What steps should Black have taken?

Use the Codes of Ethics and Professional Misconduct as your guides

ASSOCIATION OF PROFESSIONAL ENGINEERS OF ONTARIO

PROFESSIONAL PRACTICE EXAMINATION – August 12, 2017

PART “B” - Engineering Law and Professional Liability

This examination comes in two parts (**Part “A” and Part “B”**). Both parts must be completed in this sitting. You will be given a total of **180 minutes** to complete the examination.

Use the correct colour-coded Answer Book for each part, place in the correct envelope and **seal after completed**.

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All **four** questions constitute a complete paper for Part “B”. Each of the four questions is worth 25 marks.

(25) 1. Briefly define and explain any five of the following:

- (i) Secret commission
- (ii) Alternative dispute resolution
- (iii) The discoverability concept
- (iv) Fraudulent misrepresentation
- (v) Contra proferentem
- (vi) Parol evidence rule
- (vii) The fiduciary duty of a director
- (viii) The New York Convention

(25) 2. A new corporation (“Newco”) submitted a bid to a developer to install a solar farm project in southern Ontario.

Newco’s fixed price of \$3,400,000.00 was the lowest bid and the contract was awarded to it. The contract conditions entitled Newco to terminate the contract if the developer did not pay monthly progress payments within 20 days following certification that a progress payment was due. Pursuant to the contract, the certification was carried out by an independent engineering firm engaged as the project designer and contract administrator.

The work under the contract was to be performed over a 6 month period. After commencing work on the project Newco determined that it had made significant judgment errors in arriving at its bid price and that it would face a major loss on the project. Its concern about the anticipated loss was increased further when it also learned that, in comparison with the other bidders, its bid price was extremely low and that, in winning the bid, it had left more than \$1,400,000.00 “on the table”.

Two monthly progress payments were certified as due by the independent engineering firm and paid by the developer in accordance with the terms of the contract. However, after the third monthly progress payment was certified as due by the independent engineering firm, the developer’s finance department asked Newco for additional information relating to an invoice from a subcontractor to Newco. The subcontractor’s invoice comprised a portion of the third progress payment amount.

There was nothing in the signed contract between Newco and the developer that obligated Newco to provide the additional information on the invoice from its subcontractor. However, Newco’s representative did verbally indicate to the

Part B, PPE, August 12, 2017, Page 2 of 4

developer's finance department that the additional information would be provided.

The additional information relating to the subcontractor's invoice was never provided by Newco.

Sixteen days after the third progress payment had been certified for payment, Newco notified the developer in writing that it was terminating the contract because the developer was in default of its obligations to make payments within fifteen days pursuant to the express wording of the contract.

Was Newco entitled to terminate the contract in these circumstances? In giving reasons for your answer, identify and explain the relevant legal principle and how it would apply.

(25)

3. Live Rail Inc. ("Live Rail"), a company specializing in the manufacture and installation of railway commuter systems was awarded a contract by a municipal government to design and build a transit facility in British Columbia. The contract specified electrically powered locomotives. As part of the design, Live Rail was contractually obligated to design an overhead contact system in a tunnel. Live Rail subcontracted the design of the overhead contact system to a consulting design firm, Ever Works Limited ("Ever works").

Ever Works designed an overhead electrified wire contact system suspended from the ceiling in the tunnel, however, in doing so it did not carry out any testing, nor did it gather any data of its own relating to the conditions inside the tunnel. It did not even request copies of underlying reports, which, had they been examined, would have indicated that there was a large volume of water percolating through the tunnel rock, and that the tunnel rock contained substantial amounts of sulphur compounds. The project documentation that was turned over to Ever Works by Live Rail did not include the underlying reports, but did identify the existence and availability of the underlying reports.

The construction of the rail system through the tunnel was completed in accordance with the Ever Works design. However, within eight months of completion, the overhead contact system in the tunnel became severely corroded and damaged due to the water seepage in the tunnel. As a result of the corrosion damage, the municipality had to spend substantial additional money on redesigning and rewiring the system.

What potential liabilities in tort law arise in this case?

In your answer, explain what principles of tort law are relevant.

- (25) 4. An Ontario municipality (the "Owner") decided to construct a gas-fired power plant. To do so, the Owner invited competitive tenders from contractors for the construction of the new gas-fired power plant facility.

The Owner's consultant on the project, a professional engineer, designed the facility and prepared the Tender Documents to be given to contractors interested in bidding on the project. Each of the bidders was required to be prequalified and approved by the Owner for participation in the bidding. The Tender Documents included the Plans and Specifications, the Tendering Instructions which described the tendering procedure and other requirements to be followed by the bidders, the Tender Form to be completed by the bidders, the form of written Contract that the successful contractor would be required to sign after being awarded the contract, and a number of other documents.

According to the Tendering Instructions, each tender bid as submitted was to remain "firm and irrevocable and open for acceptance by the Owner for a period of 60 days following the last day for submitting tenders". The Tendering Instructions also provided that all bids were to be submitted in accordance with the instructions in the Owner's Tender Documents and that the Owner was not obligated to accept the lowest or any tender.

Tenders were submitted by five bidders. All bids were submitted in accordance with the Owner's Tender Documents. The lowest bid was well within the Owner's budget.

Within the 60 days specified and before the Owner's consultant had made a recommendation to the Owner as to whom the contract should be awarded, the consultant was called to a meeting with a prominent member of the Municipal Council who noted that the lowest bidder was not one of the bidders who were "local bidders" from within the Municipality. The Councillor expressed a very strong view that the contract should in fact be awarded to a local bidder. The Councillor also noted that if one item that had been included in the specifications was deleted from the bids the result would be that the bid of the lowest "local contractor" would become the lowest bid overall and the Councillor's preference for awarding the contract to a "local contractor" could be satisfied.

There had been no reference in the Tendering Instructions to any preference being shown to local contractors.

How should the consultant deal with the political pressure being applied by the Council member?

If the contract is awarded to the lowest local bidder what potential liabilities in contract law may arise? If the consultant engineer recommends to the

Part B, PPE, August 12, 2017 Page 4 of 4

Owner that the contract be awarded as the Councillor suggests what liabilities may arise for the engineer? Please provide your reasons and analysis.