

COMMON ISSUES ON ESSAY WRITING – PROFESSIONAL INTERVIEW FOR GRADUATE ENGINEERS



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Ataining the status of Professional Engineer (P. Eng) ought to be the primary objective for young engineer graduates. Under Section 10(2) of the Engineers Act 1967 (Rev 2015), a Professional Engineer registered with the Board of Engineers Malaysia (BEM) may:

1. Take up employment which requires him to carry out or perform professional engineering services.
2. Be entitled to use the title "Professional Engineer", "P. Eng" or its abbreviation "Ir." on his name card or any identification to describe himself.
3. Display any sign, board, card or any device to imply that he is a Professional Engineer.
4. Use the stamp of Professional Engineer.

Engineers Without Borders, a non-governmental organisation in the United States of America, listed the following top five reasons to want to be a P. Eng:

1. It impacts human civilisation advancement through specialised skills with high standards for ethics and quality assurance.
2. It solves the puzzles in everyday life through imagination of creative solutions that he has designed.
3. The licence opens the door to opportunities. Having the qualification is indication that you belong to a small group of people who are highly desirable to employers or for career advancement.
4. It represents a certification of trust to the public of your engineering skills. It means you have reached a certain level of competency acceptable to your peers. It means you are able to take more responsibilities and can handle complicated and important tasks.
5. It also means that, with greater responsibilities and competency levels, you can earn a salary higher than that of a non-P. Eng.

In the nutshell, a P. Eng qualification gives prestige and dignity to an engineer. Having interviewed many candidates, from young graduates to corporate CEOs, over the last 10 years, I have found that many fail because of poorly written essays. Some candidates did well on their experiences and technical reports as well as the oral interview, but they stumbled on the technical and ethics essays.

For the purpose of illustration, I have appended comments from interviewers and reviewers to show the process of evaluating a candidate. There are two interviewers for each candidate. The principal interviewer is a senior engineer with over 10 years' experience post-P. Eng experience while the second interviewer has over 5 years' experience post-P. Eng. All failure cases are referred to a reviewer (very senior P. Eng)

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for a second opinion prior to being tabled at the IEM PI Board. Candidates have a choice to write in either English or Bahasa Malaysia and are given three hours to write two essays.

TECHNICAL ESSAY

The following are some comments by the interviewers and reviewers on technical essays.

CASE 1

"Technical essay is too general and the candidate has not demonstrated his understanding and experience." - Interviewer

"Essay written was too general. Candidate did not quote any example to support his case. He should have given one typical example and elaborated on it". - Reviewer

CASE 2

"Poorly written, lack of knowledge on the subject". - Interviewer

"Essay was written in very poor English. It was only one and half pages which was too short. Candidate had limited knowledge on the subject and only listed two issues and elaborated on one of them. Essay should have been written with more problems encountered and then elaborated on." - Reviewer

CASE 3

"Candidate failed to demonstrate his knowledge in hydraulic, particularly on sewer line connection". - Interviewer

"Candidate did not fully answer question set by the interviewer". - Reviewer

CASE 4

"Shallow description in both Section A and B". - Interviewer

"Section A was poorly written. Candidate had not shown sufficient and strong evidence on technical knowledge. Had shared some technical challenges in implementing the project, but essentially little engineering matters were discussed and explained". - Reviewer

CASE 5

"Poor standard of English. Not able to present the points clearly". - Interviewer

"Candidate should have spent his first 10 minutes organising his thoughts before proceeding with his essay. The essay was therefore not well organised and was rather short. There were still a number of important issues not highlighted". - Reviewer

These comments are typical for all engineering disciplines. Technical essay questions are normally tailored according to the candidate's working experience. Rightfully, it should not be too difficult to pass if the candidate had gone through sufficient training with solid engineering fundamentals and proper supervision. From the comments above, the following are major problems for the candidates:

1. Inability to put together thoughts in a coherent manner. Essays were written without clear ideas and direction. Lacked organisation and structure. The irony is that some candidates are able to submit very well-written technical reports but are unable to replicate the same for their essays! Writing an essay under pressure requires a clear mind, unlike preparing reports where candidates have the time to plan and conduct reviews. Nevertheless, candidates must learn to deal with the pressure with proper strategy.
2. Poor command of language, especially English. Candidates have the option to write in Bahasa Malaysia if they feel their command of English is poor. The inability to communicate properly in either language hampers

MY IEM VISION FOR INTELLIGENCE IS BASED ON HOW DOING THINGS

Not many of us realise that the current vision statement of IEM is *“to be the premier professional organisation pivotal to Malaysia achieving Vision 2020”*. It is coincidental that my term of office as President also ends in 2020, the year Malaysia is poised to become a developed nation. A new Vision Statement is currently drafted and it is timely to review how well our Institution has complied with its lofty ideals and of how the goals in my term of office will help bring us closer to it.

WHERE IS IEM IN A NUTSHELL?

With its strong 48,000 plus membership, we certainly count as one of the biggest professional organisation in the country. Our representations in the Board of Engineers as well as in the Engineering Accreditation Council, speak volumes about our credibility in the engineering fraternity. We are non-partisan and have a strong culture of independence that have successfully shaped the conduct and activities of the organisation. Most important is that the Institution is financially stable with assets in the millions. That IEM is a premier professional organisation is undeniable.

As a premier organisation, IEM speaks out on engineering issues pertinent to national interests. We have continued with our position papers that we present to the authorities and press statements for the general public. Our members sit on many committees that require engineering input in the different disciplines that the institution represents. Furthermore, our members in their individual capacities are employed in important positions in the public and private sectors and in the course of their regular employment, make immense contribution to the national agenda for attaining Vision 2020.

HAVE THE GOALS I SET FOR MY TERM OF OFFICE HELPED IEM ACHIEVE ITS VISION?

As President, I have defined my agenda for my two year term until 2020, mindful of continuing the legacy of the Institution and of fulfilling its vision for 2020 and beyond. As I endeavour to accomplish my agenda, I am awed that I stand on the “shoulders of giants” – those imminent members who have brought IEM to where it is today. I can only attempt to emulate their good work as I set on the task of bringing the Institution further towards its vision.

Integrating IEM Branches with the Headquarters and bringing about a change in mindset that promotes trust and cooperation have been my prime concerns since I took office last year. I have visited every Branch in my first



1. Waving the ASEAN handshake during the Opening Ceremony of the 36th CAFEO by the Deputy Prime Minister of Singapore on 13 November 2018 at Resort World Sentosa, Singapore

2. Visiting Works Minister, Y.B. Tuan Baru Bien at the Ministry of Works on 19 February 2019

nine months in order to drive home the point that Branches are an equally important part of the Institution. I may not have fully succeeded in this task yet but I am convinced that it is important to create the synergy that will not only enhance IEM as a whole but also enable the Branches to pursue goals that they are unable to do on their own.

As with other Past Presidents and Vice Presidents, I have initiated several visits to various Ministers, senior government officers and chief executives of major companies to engage with them on matters related to engineering. Specific issues have been taken up with each of them. I am proud that we have even managed to have an audience with the **Honourable Prime Minister of Malaysia, Tun Dr Mahathir bin Mohamad** who has graciously accepted the award of Distinguished Honorary Patron from the ASEAN Federation of Engineering Organisations (AFEO). He has also consented to be our Distinguished Guest of Honour at our 60th Annual Dinner. That IEM's presence is made known to and respected by our leaders in the public and private sectors are important if our voice as a professional institution and in representing the engineering fraternity is to be heard.

I have also continued with the task of making IEM a leader in the global arena by attending, in my capacity as President of IEM, in as many international functions and meetings as I possibly can. Through these efforts, tremendous goodwill has been established with international engineering organisations and with imminent engineering leaders in

2020 AND BEYOND EFFICIENT A SPECIES BECOMES AT IT NEEDS TO SURVIVE



3. Visiting the Minister of Primary Industries, Y.B. Puan Teresa Kok on 4 March 2018 at her office in Putrajaya

4. Visiting the Finance Minister, Y.B. Tuan Lim Guan Eng at Putrajaya on 25 February 2019



5. AFEO Heads of delegation together with AFEO Secretary General, AFEO Head Commissioner and AFEO Hon. Treasurer in a family photo with Y.A.B. Tun Dr Mahathir bin Mohamad, Prime Minister of Malaysia after his conferment as Distinguished Honorary Patron of AFEO on 13 November 2018 at the Shangri la Hotel, Singapore

6. Representing IEM at the 17th Mid Term AFEO governing board on 7 August 2018 in Jakarta, Indonesia

other countries which will eventually bring about tangible benefits for our members in view of the trend and impact of globalisation.

Accomplishing the many goals that I have set for myself during my term of office in IEM has been a much more difficult task than I had expected. I have come to learn that getting things done in a voluntary organisation is quite unlike what works in a business entity. There are problems and pitfalls that are ingrained and needs to be addressed if the Institution is to continue as a successful organisation into the future.

WHAT ARE THE KEY CHALLENGES AS IEM HEADS TOWARDS THE FUTURE?

Many volunteers in NGOs have the misconception that their role is simply to comment and criticize, oblivious that what they said may neither be correct nor accurate. Such disservice can create animosity, confusion, distrust or disharmony as well as inefficiency in the organisational machinery.

All voluntary organisations work through collective actions that are designed to take advantage of the diverse opinions and resources of its volunteers. This is meant to ensure that the best outcome will be obtained. There is however, the downside where an individual volunteer's accountability might not be apparent. Decisions may be made through secret ballot meaning that many a time, volunteers hold the power to decide with no individual responsibility. Individual responsibility in decision

making is important so perhaps the secret ballot has to be re-examined in the right context.

To improve on the quality of the collective decisions made by the Institution, we need to be more conscientious of the deliberation process which precedes decision making. It is in fact deliberation that is the cornerstone of good decision making. There must be effort made to understand the facts and the circumstances, to engage in meaningful discussions, to participate fully in advocating important standpoints and most importantly, to keep an open mind towards different opinions.

There is an urgent need to re-align the attitude of our volunteers and of our office bearers in particular and to channel their enthusiasm in the right direction - a long term task impinging on organisational culture, the constitution and its rules and regulations. Meanwhile, as I try to complete my term of office, I could only implore that our office bearers and volunteers in general do more to understand in greater detail, the issues and critical nuances confronting the Institution and to participate more fully in the deliberation process to ensure that the best decision, devoid of personal agendas, will be the final outcome. If that can be done, I am sure that the Institution will continue to be a premier professional organisation and succeed well beyond 2020 and into the future.

I end with a quotation from Charles Darwin (1809): ***"It is not the strongest of the species that survives nor the most intelligent but the ones most responsive to change"***. ■

proper comprehension by the interviewers on the matters being written. Not being able to master a language with proper grammar, spelling, vocabulary and punctuation with reasonable literary flair would render the essay meaningless as it would not convey the thoughts of the writer.

3. Inability to articulate knowledge to impress the interviewers of their wealth of experience. Essays are found to be too simplistic or merely touching the surface of the subject, without examples, deliberations of facts and not delving into the detailed technicalities of the matter. In universities, engineering students are taught to write assignments, laboratory reports and subsequently, in the course of their work, would have written many technical reports, so they should be able to replicate this during the interview session.
4. Some candidates cannot put together convincing arguments in their essays because they have not gone through a thorough training process. They may have a sufficient post-graduate working period (minimum three years) to qualify for the interview but if they have been job-hopping, they only spend short periods with each employer. As a result, they will not have gone through the whole engineering project cycle which is commonly between 3 and 5 years. They may have experienced the whole process only in bits and pieces with each employer; this is not holistic or rigorous enough to prepare them for the interview. It is important that aspiring P. Eng's find suitable employment and training supervisors to ensure they get proper guidance and supervision.

The intent of the technical essay question is to find out the candidate's communication skills, analytical and critical mind as well as maturity of thoughts. It is also to gauge the awareness and concerns of engineers in safeguarding public interest in their judgments. The principal interviewer would normally set the question at the end of the oral interview in accordance with the candidate's training. Typical technical essay questions are listed below.

EXAMPLE 1

The term "value engineering" began with a creative, team-based approach which allowed the generation of alternatives to the existing solution. The implementation of Value Management/Value Engineering (VM/VE) in construction project is new in Malaysia.

- i. *What are the differences between VM/VE practices compared to the normal roles that have been practised by the construction project management consultant.*
- ii. *Discuss the problems/difficulties you have encountered in implementing it in one of your projects. Describe the solutions that you have taken to overcome these problems.*
- iii. *What are the drawbacks (policy/culture/legal/ethical) in implementation of VM/VE? Discuss your answer by providing examples. What are the liabilities of Value Manager with the implementation of VE in design?*

EXAMPLE 2

The issues of Indoor Air Quality (IAQ) and humidity have been in the limelight lately. Recent examples of such problems are mould and fungus problems in hospitals.

- i. *What are the factors affecting indoor air quality problems?*
- ii. *What are the legislations in Malaysia or Standards that govern the IAQ in buildings? Discuss the relevance of such legislation or standards in relation to current industry practice in Malaysia.*
- iii. *Give a brief methodology of how to diagnose IAQ problems.*
- iv. *Discuss on how you would do to ensure the building you are designing will not suffer IAQ problem during operation.*

EXAMPLE 3

Elaborate on:

- i. The conceptual and detail engineering design of the metering skid for Tanjung XXXXX drilling platform.
- ii. Explain the Coriolis meter principles and implication to system design/ impact on design.
- iii. Elaborate on the impact of design flowrate if it is higher or lower than the recommended design specifications.

EXAMPLE 4

Discuss how universities and academicians in the engineering fraternity can assist Small Medium Industries Entrepreneurs (SME) in upskilling and upgrading their capabilities in terms of manufacturing professionalism and quality of product.

If SMEs raise the issue on financial constraints as a stumbling block to implementing "Good Manufacturing Practice (GMP)" principles, how will universities and academicians provide assistance to achieve this?

EXAMPLE 5

Explosions in industrial facilities lead to loss of life, financial capital loss and environmental pollution. As you have gained experience in quality control engineering, how would you eliminate such an accident from happening?

EXAMPLE 6

What are the challenges of Unmanned Aerial Vehicle (UAV) development and operations in the Malaysian civilian environment.

EXAMPLE 7

Your institute is going to undertake a group of young electrical engineers to attend a 33/11kV transformer maintenance course. As a trainer, you are required to develop the course for the group. Describe the procedures to develop the course on 33/11kV transformer maintenance.

EXAMPLE 8

Your client is desirous to install 500 kW grid-connected photo voltaic system in his building with the intention to sell some of the electricity generated to TNB. Explain the design process, statutory requirements and approval process of the authorities.

EXAMPLE 9

As a design engineer, elaborate on the various considerations that have to be taken into account in the design of building structural components with due regards to sustainable construction.

These are typical questions put forward to candidates from various backgrounds, from design, operation and maintenance to academic. In principle, the questions are set to test candidates on (1) general knowledge, norm or common engineering practice of the subject matter, (2) legislations or standards governing the subject and (3) critical appraisals or assessments on current engineering practice.

CODE OF PROFESSIONAL CONDUCT ESSAY

The main purpose of the Code of Professional Conduct essay questions is to allow candidates to demonstrate their professionalism in discharging their duties. For the ethical questions essay, the most common comments from interviewers and reviewers are:

CASE 1

"Candidate did not submit a proper and complete Section B essay. His essay was too brief and did not address his understanding of the relevant IEM regulations on professional conduct. Candidate has to take a more serious view of his Section B essay and to improve his attitude and professionalism". - Interviewer

"Candidate did not understand what a bankable report was. Essay was written in very poor English and was too short and incomplete". - Reviewer

CASE 2

"He has to improve writing skills in English if he intends to do well in his engineering career. His written essay on Code of Ethics is particularly appalling and it appears that he is unprepared for PI". - Interviewer

"Candidate was not fully prepared in his essay writing and did not fully understand our IEM/BEM Code of Professional Conduct and contemporary ethical issues in the engineering profession. The essay written was rather short with bad grammar, poor spelling and no proper heading". - Reviewer

CASE 3

"The candidate was not able to present his ideas in detail to show his understanding of Code of Conduct/Ethics. Candidate was unable to present his thoughts in a structured and concise manner on the essays (both Section A and B)". - Interviewer

"Candidate could not fully understand our IEM/BEM Code of Professional Conduct and contemporary ethical issues in the engineering profession. He simply wrote two short paragraphs with four sentences for his answer. He clearly did not understand the question and was unable to answer with suitable content and relevant examples". - Reviewer

CASE 4

"Technical essay was well written according to requirement. However, the candidate didn't elaborate adequately on Code of Ethics question. Obviously lacking in technical knowledge and maturity. Her attempt at the Code of Ethics question also fell short". - Interviewer

"Code of Ethics question fell short as agreed with Principal Interviewer". - Reviewer

CASE 5

"Ethics essay failed to express the conflict of 'professional' interests and without clear example(s) to demonstrate his thoughts. Only general conflict issues were mentioned". - Interviewer

"Essay not well debated and articulated. Too simplistic approach and lacks in-depth/critical analytical thought process. Did attempt to explain some points, but kept repeating them". - Reviewer

The Code of Professional Conduct is available from BEM website. Essay questions on the Regulations on Professional Conduct can be accessed from IEM website. There are 13 essay questions which cover the whole spectrum of engineering practice in Malaysia. Candidates are normally required to answer one question closest to their working experience.

From the above, it can be seen that most failures are related to the inability to relate the Code of Professional Conduct to reality. Candidates are either ill-prepared to sit for the interview or lack the capability for story-telling to relate the code to real-life situations. General knowledge and maturity of thoughts are also important to enable a candidate to relate the many circumstances in which one's professionalism is being tested. Candidates should not only conversant in their technical knowledge, but should also have a general understanding of ethical issues related to the profession.

Some people feel that the Code of Professional Conduct can be taught in universities or at seminars. While this may serve as a good introduction to the Code, the actual test is when graduates are faced with a real-life situation. In a study by

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Institut Integriti Malaysia in 2017, it was reported that 35.8% of respondents felt that "Penerimaan hadiah dalam bentuk wang, barangan atau perkhidmatan sebagai balasan atas perkhidmatan yang diberikan" was NOT considered a corrupt practice! This is shocking indeed; it means one out of three young graduates consider accepting gratifications for services rendered as a non-corrupt act.

With all the current world technological sophistication and financial wizardry, young engineers are easily exposed to many compromising circumstances. Therefore, it is insufficient for a P. Eng candidate to merely regurgitate word-by-word the Code of Professional Conduct in his essay without truly understanding the philosophy behind the creation of the Code.

CONCLUSION

Aspiring P. Eng candidates need to prepare themselves properly before sitting for the interview. Examples mentioned in this article are not confined to young engineers only as even middle-aged candidates have suffered the same fate. Although BEM and the IEM are desirous to increase the number of professional engineers in this country, it has to be done with caution as only the deserving, qualified and competent candidates should be passed.

A candidate is given 3 hours to complete the two essays. It is important that he manages his time properly between the two essays. Each essay should have sufficient length with proper legible handwriting. Proper sentence structure must be used and point-form write-ups should be avoided.

Generally, in order to write a good essay, one needs to remember the following essay structure:

1. A clear introduction with a thesis statement (an answer to the question or a response to the task) and a well-defined structure
2. Logically structured body paragraphs which include supporting evidence or example.
3. A clear conclusion which restates your topic and summarises your essay and thesis.

For the technical essay, it is very important that candidates spend some time to gather their thoughts prior to writing the essay. The essay must include examples and elaboration of the examples. Critical appraisal or problem solving would be an added advantage. To aid the preparation, candidates need to also read articles in magazines and journals that are related to his job scopes. A well-read person would likely be able to present better views to the question asked.

As for the ethics questions, candidates need to familiarise themselves with the pre-prepared questions. Most likely, they will be asked to write on a topic closest to their job scopes and experience. As professional ethics is a set of standards defined by the professional community which serves as a guide for behaviour expected in a professional, they should also keep themselves abreast of ethical issues surrounding the engineering profession. General knowledge of financial crisis, project failures, corruption cases, fraud cases as well as government policies are also important to add flavour to the essay. A professional engineer with the prefix "Ir" carries greater responsibilities, so candidates should approach the professional interview with the highest standards expected of them. ■

Note:

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¹Institut Integriti Malaysia, Laporan Hasil Dapatan Kajian Persepsi Mahasiswa Mengenai Rasuah di Malaysia 2017; Datuk Dr. Anis Yusal Yusoff & Zarina Mohamad Amin; <http://integriti.my/wp-content/uploads/2017/07/Hasil-kajian-Mahasiswa.pdf>

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