

**IEM**

**Engineering Technician Member Guidelines  
for Applicants and Candidates**

## Table of Contents

- I. The Technician Assessment**
  1. Definition
  2. General Regulation
  3. Condition of Submitted Documents
  
- II. Preparation of Documents**
  1. Technician Assessment Application Form
  2. Training and Experience Report (Portfolio of Evidence)
  3. Technical Report
  
- III. The Interview**
  1. Introduction
  2. Conflict of Interest
  3. Oral Assessment
    - Presentation
    - Question & Answer
    - Opportunity for Final Evidence
    - End of Oral Assessment
  4. Written Examination
    - Subjective Questions
  5. Preparation for Assessment
  6. Post Assessment
  
- IV. Glossary**

## I THE ASESSMENT GUIDELINES

### 1. Definition

This IEM Engineering Technician Competency Standard consists of fourteen (14) Competency Elements that are grouped under five (5) broad Competency Categories:

- A. Knowledge and understanding
- B. Design and development of processes, systems, services and products
- C. Responsibility, management or leadership
- D. Communication and inter-personal skills
- E. Personal commitment

The five generic areas of competence and commitment must be demonstrated in order to practice competently. The Competency Elements are used as the basis for assessment in the Engineering Technician Competency Assessment by the IEM. Applicants will be required to provide evidence of competence against each of the fourteen (14) Competency Elements. The evidence is to be drawn from their work experience, specifically as they have encountered engineering problems or engaged in engineering activities.

A glossary of terms is included in the Guidelines.

#### Interpretation

Unless the context requires otherwise:

- a) words in the singular include the plural and vice versa;
- b) words importing the masculine gender include the feminine gender.

### 2. General Regulation

2.1 The Engineering Technician Competency Assessment shall be held throughout the year in Malaysia in IEM Headquarters (HQ) or any of its twelve (12) Branches.

2.2 Before a person is eligible to apply to sit for Technician Assessment, he must have gained at least three (3) years of approved experience after graduation with an accredited engineering diploma. The experience should be in supervision, execution of repair and maintenance and management of such works as are comprised within the profession of an engineering technician, or relevant experience.

2.3 The Engineering Technician Competency Assessment Process consists of two stages:

**Stage 1:** Submission of Technician Assessment Application Documents for documentary review of competency evidence to assess Applicant's eligibility and readiness for the Assessment.

**Stage 2:** In-person assessment of Candidate that consists of oral examination as well as answering of five short questions.

- 2.4 An Applicant for Engineering Technician Competency Assessment must submit one copy of the Application Form together with the following:
- IEM Engineering Technician Membership Application Form;
  - Two (2) sets of Technician Portfolio of Evidence; and
  - Technician Assessment fees
    - ✓ Application Fee (stage 1); and
    - ✓ Assessment Fee (stage 2).
- 2.5 During Stage 1 of the process, if any of the competency evidence is assessed to be inadequate, the Applicant will be asked to resubmit supplementary documents. IEM Secretariat will inform him of the areas of shortcomings.
- 2.6 The Applicant will have to resubmit the supplementary documents within two (2) months upon receiving the notification letter. If documentary review of the competency evidence is deemed inadequate after two (2) times of resubmission, the Applicant would not be eligible to proceed to Stage 2. The documentation submitted by the Applicant will be returned and Stage 2 fee be refunded.
- 2.7 Upon satisfactory documentary review of the competency evidence and Technical Report, the Applicant will be informed in writing on his eligibility to attend the Engineering Technician Competency Assessment, which consists of subjective questions and oral interview (face-to-face or virtual).

The IEM Secretariat shall notify the Candidate of the date, time and place of the Competency Assessment.

### **3. Condition of Submitted Documents**

- 3.1 Application Documents have to be submitted in the following conditions:
- The form should be word-processed and submitted electronically using a minimum font size of 9
  - Alternatively, the form should be type-written using black ink
  - If you choose to submit by hard copy, please do not bind your application for the purpose of scanning

## **II. PREPARATION OF DOCUMENTS**

### **1. Engineering Technician Member Application Form**

This section shall guide the Applicant on how the form should be presented.

#### **1.1 Part A: Personal Details**

- Provide your personal details including your contact address
- Choose your preferred venue for Engineering Technician Competency Assessment
- Choose the preferred language for the Competency Assessment in either English or Bahasa

Malaysia. Upon making the choice, the entire Technician Assessment shall be conducted in your selected language, including the various forms, oral interview and subjective questions.

**1.2 Part B: Current Employment**

- Complete details of your current employment

**1.3 Part C: Your Expertise**

- Tick the main sector and sub-sector most relevant to you and your area of expertise. For “Others”, please specify them accurately.
- Specify the engineering discipline as registered with “Board of Engineers Malaysia” (BEM) and attach a certified copy of BEM Registration Certificate as evidence.

**1.4 Part D: Education**

- List the details of all your academic qualifications awarded
- Give details of any formally assessed work-based learning acquired
- Attach a copy of your documents, certified by one of your Supporters as a true copy of the original.

**1.5 Part E: Professional Development or Training Schemes**

- Give details of any formal or structured training or professional development programs you have completed.
- Specify the competencies gained (refer to the fourteen competency elements) and quote the scheme reference numbers and the names of accrediting institutes, if applicable.

**1.6 Part F: Relevant Career History**

- Provide details of your work experience in chronological order starting from your first postings upon graduation from your institute of higher learning. For each of your posting, indicate the followings:
  - ✓ Duration of posting and job title
  - ✓ Name and address of employer
  - ✓ Your main responsibilities, tasks and achievements

For each posting, give evidence on what you have done rather than what the job requires you to do, focusing on answering to the fourteen (14) competency elements. You may give an extended description of your role, or the role that is most relevant to demonstrate your competence, giving details of your responsibilities and contributions.

**1.7 Part G: Declaration**

- Initial on every page of your application form. Sign and date the application, confirming that the statements given are true to the best of your knowledge.
- Declare that you do not plagiarise your application. Understand that plagiarising will render the application null and void, and you may be barred from professional interview.
- Make sure you only sign the declaration after all your supporters have signed.

## 1.8 Part H: Supporters' Details

- IEM Bylaws requires your application to be supported and signed by a Corporate Members in The Institution.
- Since Supporters will be required to confirm your suitability for Engineering Technician Membership.
- Your chosen Supporters should know you well and be convinced, through direct or personal experience, that you are suitable to be elected or transferred to the grade of ETn.I.E.M. The Supporters typically have detailed and up-to-date knowledge of your work so that all the information in the application can be verified.
- Your chosen Supporters may be a selection of the followings:
  - ✓ Professional Engineer registered with Board of Engineers Malaysia
  - ✓ Corporate Member/Engineering Technologist/Engineering Technician of IEM
  - ✓ Applicant's Mentor under IEM Engineering Competency Development (ECD) Program.
- At least one of the Supporters must be of the same engineering discipline; and preferably from the same organisation as that of the Applicant.
- The Supporters should be working at a senior level to the Applicant, preferably for at least two years, and with direct knowledge of the Applicant's work, role and responsibilities. In the event that the above is not available, the current line manager, or employer in higher organizational hierarchy, may act as Supporter, provided he is a Corporate Member of IEM or equivalent.
- It is important to choose a lead Supporter, who can assist you in the process of the application, including the advice of filling up the Application Form, presenting Portfolio of Evidence in the Training & Experience Report, preparing for the oral assessment.

## 2. Training and Experience Report (Portfolio of Evidence)

- 2.1 This section shall guide Applicant on how to prepare the Training and Experience Report in the form of Portfolio of Evidence which the Applicant is required to submit two copies together with Technician Assessment Application Form.
- 2.2 The Applicant is required to provide evidence for each of the five (5) Competency Categories A, B, C, D and E covering the fourteen (14) competency elements, which are used as a basis for assessing the Applicant when he applies to sit for the Interview. The evidence written for each competency category should typically be around 300 words, excluding appendices and attachments.
- 2.3 The Applicant has to cross-reference with "Part F: Relevant Career History of Technician Assessment Form" when preparing the Training and Experience Report. Typically, he has to transcribe the evidence from his career history to all the relevant competency categories. In doing so, he has to provide an extended description of his role, responsibilities and achievements relevant to the competency category to which a piece of evidence is transcribed. The Applicant has to indicate the tasks encountered in the course of his work experience,

describing the related engineering activities, problems encountered and their resolutions. This will form the portfolio of evidence for the competence gained under each competency category.

- 2.4 The evidence should be given in a clear and concise manner detailing only the essential facts as proof of competencies. The Applicant may attach relevant documentation to support the evidence of competency, initialling/signing on each page of the attached documentation. The supporting documentation should also be clearly referenced. The evidence of competencies shall be assessed by MAB for his eligibility or readiness to sit for the Technician Assessment.
- 2.5 Applicant should take note that the right-hand column denotes the revision reference and its date of re-submission of the evidence; hence the column should be left blank in the first submission. When any evidence for any of the categories is found to be inadequate, Applicant will be asked to re-submit the evidence. The revision reference and its date of submission will then be logged in the right-hand column.
- 2.6 Applicant should get the Supporter to endorse the evidence and initial/sign on every page of the form, including the supporting documentation.

### **III The Assessment**

#### **1. Introduction**

- 1.1 The Engineering Technician Competency Assessment will consist of two parts, namely:
  - i. The Oral Assessment
  - ii. The Subjective Questions
- 1.2 The Candidate must complete the two parts in order to satisfy the requirements of the Engineering Technician Competency Assessment.
- 1.3 The Engineering Technician Competency Assessment will be conducted by one (1) experienced IEM Corporate Members or Engineering Technologist or Engineering Technician Member, who are trained for this purpose.
- 1.4 IEM Secretariat will normally help in arranging for the Assessment by coordinating with both the Interviewers and the Candidate regarding the date, time and venue.
- 1.5 Once the date of Assessment has been agreed and fixed, the Candidate shall have to abide by it.
- 1.6 Candidate may request for postponement of the Assessment, if he can provide valid reasons that are acceptable to the Interviewers. However, postponement can only be considered if it is within less than two (2) months from the original date of Assessment, otherwise it shall render the assessment null and void; and the Candidate shall have to make a fresh application.

#### **2. Conflict of Interest**

- 2.1 Candidate should not be interviewed by any of the following:
  - Supporter for the application
  - A person who has verified Candidate's application form
  - A person employed in the same or related organisation as the Candidate

- A person who has close family relationship with the Candidate
  - A person who is a close friend of the Candidate
  - Any person who may have a conflict of interest, either for or against the Candidate
- 2.2 It is the Candidate's ethical duty to request for a change of Interviewers before the Assessment, if one or more of the above-mentioned conditions exist.

### **3. Oral Assessment**

- 3.1 The Oral Assessment will normally be allocated about one hour and thirty minutes for each Candidate.
- 3.2 Candidate should arrive at the venue for the Assessment at least 15 minutes before the start of the Assessment to allow time to settle down and get ready (if the candidate undergo a physical interview).
- 3.3 While there is a need to be flexible in the Assessment, the format is typically arranged as follows:
- Introduction
  - 10-Minute Presentation by Candidate
  - About 45-60 Minutes of "Questions & Answers" Session
  - Opportunity for Final Evidence
  - Conclusion
- 3.4 The Assessment will be conducted in the selected language, either in English or Bahasa Malaysia.
- 3.5 Candidate will be required to show some form of photo-identification at the Assessment. This is to ensure the right Candidate is examined.

#### **Presentation**

- The presentation will be allocated 10 minutes. You are expected to not exceed the allocated time.
- The content of the presentation should be based on a piece of work or project from your Training & Experience Report (Portfolio of Evidence Form) that best demonstrates Competency Categories A and B. This should be concise, enough to give key points of your personal technical contribution to the work or project presented.
- The presentation format is your choice. This may involve one or more of the following:
  - ✓ A computer-based presentation such as PowerPoint presentation (Typically 5 slides)
  - ✓ A paper based presentation
  - ✓ A verbal presentation without any other aids.
- It is important that you discuss with the Secretariat to help arrange the use of visual aids. IEM may not be able to guarantee facilities to support all audio, visual or IT requirements.
- For candidate who are undergoing physical or face-to-face interview, you are required to bring three paper copies of the presentation materials (maximum A3 size) interview, one of which will be retained by IEM and the other two will be passed to the Interviewers. Please ensure that animation created by the computer-based presentation will not hinder eligibility when the hard copies are printed out.

### Question & Answer

- Interviewers will generally use the career history of your application form as an agenda for the Examination. They will encourage you to talk about your experience in chronological order to draw out evidence of competence during the discussion.
- You should be prepared to explain the technical content of your work as the Interviewers will probe specific competence areas.
- You should also be prepared to expand other aspects of your work including management, communication & interpersonal skills, professional commitment, etc.
- Matters related to commercial sensitivity or governed by the Official Secrets Act are unlikely to be an essential part of the Examination. You will not be expected to divulge them.
- Interviewers will normally cover the full range of competencies by the end of the Oral Examination. They will ask questions in a clear and concise manner. You will have to make sure that you understand the questions first before attempting to give your answer.

### Opportunity for Final Evidence

- At the end of the Oral Examination, Candidate will be given the opportunity to:
  - ✓ Raise any points which he feels have not been covered during the discussion
  - ✓ Give any evidence which he feels may help the assessment of his case
  - ✓ Ask any questions you may have

### End of Oral Examination

- Candidate will NOT be allowed to change the engineering discipline on which it has been interviewed, to the one thought to be more appropriate.
- Similarly, the Interviewers are NOT allowed to do likewise.

## 4. Subjective Questions

4.1 Candidate will be notified on the date, time and place of the Competency Assessment, which consists of five short answer questions covering:

- Understanding of basic engineering principles
- Problem solution
- Code of Professional conduct
- Health, Safety and the Environment (HSE) aspects
- Laws/standards governing the industry for the level of engineering technician

The duration of the written assessment will be 90 minutes.

4.2 The written assessment will assess how well the applicant can produce a clear, well-structured responses within a specific time limit and has the basic ability to articulate and communicate ideas or opinions/solutions in writing.

4.3 Candidate is required to answer the questions in hand-writing. Candidate is not permitted to bring

any form of reference material or use electronic devices with content accessibility such as notebook, portable computer or mobile phones, etc. during written assessment.

## **5. Preparing for Engineering Technician Assessment**

- 5.1 The best way to prepare for the Assessment is to review your Application Form, Training and Experience Report (Portfolio of Evidence).
- 5.2 Identify and determine which of your experience best demonstrate the required range of competencies. Highlight your personal contribution.
- 5.3 Candidate is required to bring along the following:
  - A copy of the completed Engineering Technician Application Form
  - A copy of the completed Training and Experience Report (Portfolio of Evidence)
  - Three paper copies of the presentation materials
  - Photo-identification, such as MyKad, driving licence with photograph, passport or other valid documents.
- 5.4 In rare cases where the Candidate has physical writing impairment, he should communicate with IEM Secretariat to check if special arrangement could be made. IEM may not be able to give any guarantee.

## **6 Post Assessment**

- 6.1 The Interviewers will NOT indicate to the Candidate the result of the Examination, as they have to go through the due process.
- 6.2 At the end of the Examination, the Interviewers will make a report to IEM Secretariat. Candidate will be informed of the outcome when a decision is made by relevant Committees in IEM.

#### IV Glossary

- **Applicant** means an engineering technician, who has made an application to attend the Technician Assessment conducted by IEM after satisfying the necessary requirements.

Applicant should typically have gained an accredited engineering diploma and subsequently accumulated a minimum of three-years practical training and experience as an engineering technician.

- **BEM** means “Board of Engineers Malaysia”, a body corporate under the Ministry of Works Malaysia to regulate the engineering profession in Malaysia.
- **BEM Inspector of Works** means an engineering diploma holder with at least two years’ experience who had registered with BEM.
- **Candidate** means an Applicant who has been assessed and approved by IEM to sit for the Technician Competency Assessment.
- **Competency** means the ability to carry out a task to an effective standard, of which the achievement requires the necessary level of knowledge, understanding and skill, as well as a professional attitude. It is part of the requirement that must be demonstrated for an Applicant to be admitted as an Engineering Technician of IEM. The formation process of professional competence generally involves a combination of formal education and practical training and experience.
- **Competency Categories** means a group of Competency Elements that are classified under a broad area of professional competency required for the assessment in Engineering Technician Competency Assessment. The five groups of Competency Elements form a matrix to enable Interviewer to evaluate and assess the Candidates.
- **Competency Elements** means a component of Competency Category that describes a specific area of competency against which the Candidate is assessed for his level of attainment based on a specific set of standard criteria. Applicants will be required to provide evidence of competence against each of the fourteen Competency Elements.
- **Competency Evidence** means the evidence drawn from the work experience of Applicant as he has encountered engineering problems or engaged in engineering activities.
- **Competency Model** consists of fourteen “Competency Elements” grouped under five “Competency Categories”. The Model demonstrates the underpinning knowledge and understanding of engineering fundamentals, application abilities, leadership and management skills, interpersonal skills, and personal commitment to the profession that must be demonstrated in order to practice.
- **Engineering Sub Branches** means the sub-disciplines of engineering studies in which the Applicant has practiced during his training due to his unique nature of work, such as water resources, structural, highway, transportation, geotechnical, construction, environmental, building services, manufacturing, aeronautical, aerospace, automotive, industrial, marine, naval architecture, electronic, telecommunication, Computer, chemical, petroleum, process, etc.

- **Engineering Experience** means the period, in man-months, of training and experience of the Applicant in an engineering work. All trainings during the period have to be supervised by a Supervising Engineer or his Mentor.

Applicant can gain engineering competency, and the evidence thereof, in the course of his training, especially in providing solution to engineering problems. From the compilation of his Portfolio of Evidence, the Applicant can self-assess whether he is ready to make an application to attend the assessment.

**Field Experience** means the training experience in which the Applicant is involved in site supervision, investigations and verifications, testing and commissioning, as well as trouble-shooting in the field.

Field experience shall not consist merely of periodical and routine inspections, attending routine meetings, but shall have to include activities which demonstrate engineering proficiency and competency like trouble-shooting, site situational problem solving, clarifying of design uncertainties, proposing of better alternative designs, reviewing parameters and improving work procedures and standard practice, surveys, material testing and work sequencing.

**Operation and Maintenance Candidate** means the Applicant whose experience lies in the operation and maintenance of engineering plant or system, which forms the prerequisite for him to qualify to attend the assessment.

- **Engineering Technologists & Engineering Technicians Competency Assessment Board** means the Sub Committee within the Institution assigned by the IEM Council to manage the Competency Assessment.
- **Essay Writing** means the second session of the Assessment, whereby the Candidate is required to answer five short questions.
- **IEM** is the abbreviation for “The Institution of Engineers, Malaysia”.
- **IEM Branch** means one of the twelve regional IEM branches, from which Applicant may chose as his preferred venue for his Professional Interview, other at the IEM HQ. The twelve (12) IEM Branches are Kedah/Perlis Branch, Penang Branch, Perak Branch, Negeri Sembilan Branch, Melaka Branch, Southern Branch, Pahang Branch, Terengganu Branch, Kelantan Branch, Sabah Branch, Miri Branch and Sarawak Branch.
- **IEM Corporate Member** means a member of IEM who has been admitted or transferred into the grade of Member (MIEM) or Fellow (FIEM) upon satisfying the IEM Council that he has attained such standard and criteria as set by the Council being evidence of his proficiency as an Engineering Technician Members.
- **IEM Council** means the elected governing body of IEM with the mandate to direct and manage all property and affairs of the Institution, including conducting the Technician Assessment for the purpose of admission or transfer as Engineering Technician Member of IEM (MTnIEM).
- **IEM Engineering Technician Member** means a member of IEM who has been admitted or transferred into the grade of Engineering Technician Member (ETnIEM).

- **IEM Monthly Bulletin** means the monthly bulletin called 'Jurutera' published by IEM to communicate to its members on matters affecting the Institution in particular and the engineering profession in general.

The names of all Technician Assessment Candidates will be published in this bulletin. If any IEM Corporate Member has any reason as to why any of the Candidates is not a fit and proper person for election or transfer as an Engineering Technician Member of IEM (MTnIEM), he should communicate in writing to the Honorary Secretary within a month from the date of publication.

The names of successful Candidates will be published after the IEM Council has approved the election/transfer to the grade of MTnIEM.

- **MAB or Membership Application Board** means the Sub Committee in IEM designated to assess the "IEM Technician Assessment Application Document" submitted by Applicant before deciding whether or not Applicant is ready to proceed for the Engineering Technician Competency Assessment.
- **Oral Examination** is the first session of the Engineering Technician Competency Assessment, whereby the Candidate will be assessed by two (2) Interviewers to determine whether he has attained the level of competence for election/transfer to the grade of ETnIEM.
- **Peer Review** is a process by which the engineering competence of Candidate is checked by IEM Corporate Members (the would-be peers of Candidate) in the same engineering discipline to ensure that he meets the necessary standards before he is admitted as one of their peers.
- **Portfolio of Evidence** means a collection of verified facts and/or documents that Applicant must compile and present as the required evidence to show his competence against the fourteen competency elements grouped under five competency categories.
- **Interviewers** means the two IEM Corporate Members assigned by the Engineering Technologists & Engineering Technicians Competency Assessment Board to conduct the Engineering Technologist/Engineering Technician Competency Assessment.
- **Engineering Technician Member Application Documents** means the Applicant Forms, Training and Experience Report (Portfolio of Evidence) submitted by Applicant with the intention to sit for the Engineering Technician Competency Assessment.
- **Regulation on Professional Conduct** means a set of code intended to cover all eventualities on how an IEM Corporate Member or a professional engineer shall conduct himself, written in general terms based on broad ethical principles.
- **Supervising Engineer** means an IEM Corporate Member, or equivalent professional affiliation, of the same discipline who has personal knowledge of the Applicant/Candidate's roles and responsibility within the same organization or company.
- **Training and Experience Report (Portfolio of Evidence)** means a prescribed format in which Applicant is required to compile and present a collection of facts and documents as the required evidence to show his competence gained during his work experience against the eighteen competency elements grouped under five competency categories. This shall form a

basis for assessing his readiness to sit for the Engineering Technician Competency Assessment.

- **The Institution of Engineers, Malaysia (“the Institution”)** is a society established to promote and advance the science and profession of engineering in any or all its disciplines and to facilitate the exchange of information and ideas related to engineering.
- **Unsuccessful Candidate** means the Candidate who has not satisfied the IEM Council that he has attained such standard and criteria as set by the Council being evidence of his proficiency as an engineering technician.