#### **Attainment of Elements of Professional Competency Profile**

**For Professional Engineers applying for Int.PE (Pak)**

Name of Professional Engineer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ CNIC: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Engineering Discipline: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PEC Registration. No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date of Graduation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date of initial Registration with PEC: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Sr#** | **Elements of Competency** | **Detailed Description** | **Response/ Attainment by Applicant with Evidence** | **Remarks by Expert/Reviewer** |
| **\*** | Formal EducationTotal Marks:10 | 1. Bachelor of Engineering (6)
2. Master in Engineering (2)
3. M.Phil/ Ph.D (2)
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| **1.** | **Comprehend and apply universal knowledge:** Breadth and depth of education and type of knowledge Total Marks:10 (2 each) | 1. Demonstrated his knowledge and understanding of the principles, concepts, limitations and range of applicability of established mathematical tools and methods
2. Demonstrated his knowledge and understanding of the theory and related assumptions underpinning the engineering science relevant to engineering discipline
3. Assessed the impact of emerging technologies and identified how to apply them to new areas
4. Demonstrated computer applied knowledge, various computer aided engineering design, analysis programs & tools such as primavera, matlab etc.
5. Comprehended & applied advance knowledge of the widely engineering principles for good practices
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| **2.** | **Comprehend and apply local knowledge:** Type of local knowledgeTotal Marks:10 (2 each) | 1. Applied engineering theory learned through his qualification and applied it to his practical experience
2. Demonstrated his knowledge and understanding of a wide range of engineering materials, processes and components
3. Demonstrated application of local practices and work conditions
4. Demonstrated job specifications of technical team to determine appropriate methods
5. Demonstrated to interpret process, instrumentations drawings according to local needs
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| **3.** | **Problem analysis:** Complexity of analysis Total Marks:10 (1 each) | 1. Demonstrated his ability to integrate his knowledge to allow him to handle complexity and formulate judgments with incomplete or limited information
2. Able to create models or scenarios by deriving appropriate equations and by specifying 4boundary conditions and underlying assumptions and limitations
3. Developed software tools including numerical techniques to solve engineering problems
4. Demonstrated the ability to identify, formulate and solve engineering problems
5. Applied problem solving approaches, such as brainstorming, fishbone diagramming, and engineering theory to projects
6. Demonstrated the specifications for the solution and developed conceptual design for new facilities
7. Taken action to deal with the results of delay, bad weather, or emergencies at construction site/ engineering projects
8. Identified defect and failure modes
9. Managed part or all of one or more complex activities
10. Demonstrated his ability to apply design methods to unfamiliar, ill-defined problems, possibly involving other disciplines
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| **4.** | **Design and Development of Solutions:** Nature of the problem and uniqueness of the solution Total Marks:10 (2 each | 1. Investigated and defined a need and identified constraints including environmental and sustainability limitations, health and safety and risk assessment issues
2. Demonstrated his knowledge and understanding of codes of practice and industry standards, and the need for their application
3. Designed and supervised a project independently
4. Designed & developed solutions to complex problems & recommended alternative engineering solution
5. Conducted field survey for preparing preliminary engineering studies & design feasibility report
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| **5.** | **Evaluation:** Type of activity Total Marks:10 (2 each) | 1. Evaluated outcome & impacts of complex activities of a project
2. Performed, analyzed and reviewed short and long term planning for operational work of a project
3. Demonstrated periodical progress report, daily operational and long term plans
4. Assessed project needs, oversee or conducted engineering design, reviewed engineering documents, and provided guidance to management on project requirements
5. Prepared BOQ’s
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| **6.** | **Protection of Society:** Types of activity and responsibility to publicTotal Marks:5 (1 each) | 1. Prepared Environmental Impact Assessment Report (EIAR)
2. Demonstrated safety and labor compliance activities
3. Demonstrated application of healthy, safe, secure systems of work
4. Taken preventive measures for avoidable danger to health & safety
5. Managed risk to minimize adverse impact to people or the environment
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| **7.** | **Legal and Regulatory Framework:** No differentiation in this characteristic Total Marks:5 (1 each) | 1. Demonstrated the compliance with regulatory frameworks, construction and industry standards & requirements
2. Inspected and reviews projects to monitor compliance with relevant safety codes, and other regulations
3. Demonstrated completion of project as per contract agreement
4. Reviewed plans for conformity with laws, ordinance and accepted professional standards
5. Demonstrated the compliance of institution’s code of conduct
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| **8.** | **Ethics:** No differentiation in this characteristicTotal Marks:5 (1 each) | 1. Demonstrated his ability to reflect on special and ethical responsibilities linked to the application of his professional knowledge and judgments
2. Demonstrated his knowledge and understanding of legal framework of relevant legal requirements governing engineering activities, including personal, environmental, health, safety and risk issues
3. Demonstrated respect, honesty & integrity for life law & public good in professional capacity
4. Demonstrated and understanding of professional practice and ethical responsibilities by ejecting bribery and improper influence
5. Demonstrated the encouragement to the others to advance their learning and competence
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| **9.** | **Manage Engineering Activities:**Types of activity Total Marks:5 (1 each) | 1. Demonstrated use of modern tools/technologies to build models
2. Demonstrated his knowledge and understanding of the respective technicians, technologists and gathers, to constitute the engineering team
3. Demonstrated the distribution of conducting different engineering activities separately as per schedule of project
4. Demonstrated engineering analyses and developed recommendations to maintain and improve the engineering activities
5. Demonstrated the coordination and monitor the work progress of the contractors
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| **10.** | **Communication:** No differentiation in this characteristic Total Marks: 4 (1 each) | 1. Demonstrated appropriate communication techniques in order to create deeper understanding and maximum impact on a given team
2. Demonstrated the description the relevant advantages and disadvantages of a technology to a non-technical team
3. Demonstrated your ability how to communicate effectively in public with influence & communications skills
4. Demonstrated to write technical papers and reports, and synthesized his own work and that of others in abstracts and executive summaries
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| **11.** | **Lifelong Learning:**Preparation for breadth and depth of continuing learning Total Marks:6 (1 each) | 1. Demonstrated his understanding of training needs of others in appropriate engineering techniques
2. Carried out continuing professional development (CPD) necessary to maintain and enhance competence
3. Demonstrated his plans to complete self-directed CPD to improve his knowledge and competence
4. Valid membership of national Professional Body
5. Valid membership of International Professional Body
6. Earning CPD at International Level
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| **12.** | **Judgment:** Level of developed knowledge, and ability and judgment in relation to type of activityTotal Marks:5 (1 each) | 1. Demonstrated the decisions taken by him on part or all of complex projects
2. Demonstrated his participation independently on technical matters in the assigned field of expertise
3. Head of an organization/department or a project
4. Demonstrated the application of his professional and responsible judgment in a leadership role
5. Demonstrated the maintenance high level of integrity in making judgements
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| **13.** | **Responsibility for Decisions:** Type of activity for which responsibility is taken Total Marks:5 (1 each) | 1. Demonstrated in identifying his own obligations for decision making
2. Demonstrated for taking decisions independently in complex activities related to projects
3. Demonstrated to take ownership of all decisions without any obligation and pressure
4. Demonstrated the professional liability in decision making
5. Demonstrated the effect of decision making in improvement of project activities
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**Assessment of Panel of Experts:**

* **Qualified**
* **Not Qualified**

1. Member, Panel of Experts: ------------------------------ 2. Member, Panel of Experts: ------------------