**PROFESSIONAL ENGINEER**

**Summary Statement**

**These are the competency Units and Elements. These elements must be addressed in the Summary Statement (see Section C). If you are applying for assessment as a Professional Engineer, you will need to download this page, complete it and lodge it with your application.**

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| **Competency Element** | **A brief summary of how you have applied the element** | **Paragraph number in the career episode(s) where the element is addressed** |
| **PE1 KNOWLEDGE AND SKILL BASE** | | |
| PE1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline | I gained insight regarding the connection of the relay with the microcontroller and also the interfacing process of LCD. I studied the features of different components to be implemented in the system such as the water pump, LCD, microcontroller, sensor, and comparator. | A.3.1 |
| PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics and computer and information sciences which underpin the engineering discipline | I set the flowchart such that at first the condition of the tank was analyzed whether it was empty or not, and on detecting empty tank, I made the system to switch the pump on and pump the water. I configured the flowchart to provide two levels and analyzed the level of water at both of the levels, and make the system turn the pump off on the occurrence of the prescribed level. | A.3.5 |
| PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline | I used the circuit of comparator, sensor, microcontroller, a unit of display, and the pump. I utilized LCD as the output unit for reflecting system rank on the screen. | A.3.2 |
| PE1.4 Discernment of knowledge development and research directions within the engineering discipline | I prepared an extensive study by different learning sources, articles, & papers and grasped ideas, in brief, the necessity for forming the microcontroller-dependent automatic water control system. I studied the process of writing the programs to be implemented in the microcontroller | A.3.1 |
| PE1.5 Knowledge of contextual factors impacting the engineering discipline | I applied LM 324 comparator to detect inputs from electrodes in tank as per fixed resistance & detected the HIGH or low output. | A.3.2 |
| PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline | I presented the circuit diagram of a microcontroller-based system for automatic water state monitoring. | A.3.4 |
| **PE2 ENGINEERING APPLICATION ABILITY** | | |
| PE2.1 Application of established engineering methods to complex engineering problem solving | I found that the developed water state monitoring & control system could not control pumps & storage as per requirement even when the water passed the level of the copper sensor. I changed the coding and programmed programmable Atmel microcontroller 89C52 in assembly language | A.3.7 |
| PE2.2 Fluent application of engineering techniques, tools and resources | . I utilized the water reservoir model of PROTEUS software of two plastic containers for representing the source of water and destination respectively and also formed the units of power supply applying 220/12-volt transformer and ­­­­­­­bridge rectifier. I prepared the circuit layouts of the water rank monitoring & handling system using PROTEUS software | A.3.3 |
| PE2.3 Application of systematic engineering synthesis and design processes | I linked the data port of the LCD with the microcontroller port 2. Through this port, I determined that the microcontroller was capable of sending the instruction. I interfaced the LCD with the microcontroller for displaying the system status as it operated | A.3.4 |
| PE2.4 Application of systematic approaches to the conduct and management of engineering projects | I simulated the designed system and then performed testing for ensuring that the device was properly operating as per the specifications of the design. I concluded that the design of the water state automatic monitoring system was completed. | A.3.6 |
| **PE3 PROFESSIONAL AND PERSONAL ATTRIBUTES** | | |
| PE3.1 Ethical conduct and professional accountability | I followed the ISO: 4373:2008 Water level measuring devices standard while designing a water level monitoring & control system throughout this project. I also referred to the ISO/IEC 16484-3:2005, Automation and control system design standards for ensuring that the designed water level monitoring and control system was as per the standard. | A.3.10 |
| PE3.2 Effective oral and written communication in professional and lay domains | I conducted discussion sessions with team members. | A.3.9 |
| PE3.3 Creative innovative and proactive demeanour | I employed a Copper wire-based water level sensor for measuring water level inside the water storage and reservoir. I interfaced the LCD with the microcontroller for displaying the system status as it operated. I changed the coding and programmed the programmable Atmel microcontroller 89C52 in assembly language & implemented it as the processor for controlling complete system functionality. | A.3.8 |
| PE3.4 Professional use and management of information | I conducted discussion sessions with team members. I formed the Gantt chart reflecting all the activities which were required to be followed along with the depiction of the period for a specific activity. | A.3.9 |
| PE3.5 Orderly management of self, and professional conduct | I consulted my supervisor and project team for dealing with both managerial and technical issues. | A.3.9 |
| PE3.6 Effective team membership and team leadership | I made good communication with the project supervisor and also the team members. | A.3.9 |