**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 information regarding different techniques of feeding such as the aperture coupled, proximity coupled, microstrip feed line, and the coaxial feed process. | B.3.1 |
| 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 |
| 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 assumed the generation of the path of flow of current in the strip at a mid resonating frequency as f= c/ 4L1.E. I found that the current centralized in the nearby section of the trapezoid slot was generating peak frequency. I added a pair of horizontal symmetrical strips to the slot and achieved mid-frequency. | B.3.3 |
| 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 |
| 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 introduced the defective ground structure by etching the ground plane slots of the microwave circuit. | B.3.2 |
| 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 |
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| PE1.4 Discernment of knowledge development and research directions within the engineering discipline | I gained ideas related to the process of detecting the electric field line. I determined different parameters for detection of the performance like the gain, directivity, width of the band, pattern of radiation, return loss, and the VSWR. | B.3.1 |
| 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 |
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| PE1.5 Knowledge of contextual factors impacting the engineering discipline | I prepared the top section, bottom section, and side section o the antenna implementing its length, width, breadth, and depth | B.3.2 |
| 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 |
| 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 formed the model of a triple-band compact slot microstrip antenna possessing substrate, ground, and the microstrip feed line. | B.3.2 |
| I presented the circuit diagram of a microcontroller-based system for automatic water state monitoring. | A.3.4 |
| 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 determined that the formed antenna was not better enough to be applied for the application of the WiMAX and the WLAN. I applied optimum width of 2 mm. I was able to obtain proper impedance matching of the antenna. I also noticed better bandwidth and gain after solving the problem. | B.3.6 |
| 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 |
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| PE2.2 Fluent application of engineering techniques, tools and resources | I provided a complete antenna size dimensioning of 34\* 29\*1.5mm2. I determined that with increment in the strip length, there was a shift in the third and second resonance towards the lowermost section. I detected the width of the strip possesses a greater impact on the characteristics of the return loss and hence I chose optimal width of 2 mm to achieve better matching of impedance of the antenna. | B.3.2 B.3.4 |
| . 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 |
| . 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 determined in the XZ- plane the dipole-like pattern existed and in the Omni-direction-like radiation pattern was existed in the plane YZ. From the results measured, I determined that the impedance bandwidth was 22%, 12%, and nearly 23 % respectively which was better enough for the applications of WiMAX and the WLAN. | B.3.5 |
| 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 |
| 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 formed the Gantt chart reflecting all the procedures to be performed and the activities to be conducted within the period. | B.3.8 |
| 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 |
| 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 referred to the IEEE 802.11 WLAN standards and IEEE 802.16 WiMAX standards for designing and simulating a micro strip patch antenna having three operating band suitable for WiMAX and WLAN networks. I also referred to the IEC 60417 antenna standards and IEEE 149-1997 antenna testing procedure standards for designing and analyzing the performance of designed micro strip antenna. | B.3.9 |
| 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 |
| 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 updated the activities of the project as per the suggestion of the project supervisor. | B.3.8 |
| I conducted discussion sessions with team members. | A.3.9 |
| I conducted discussion sessions with team members. | A.3.9 |
| PE3.3 Creative, innovative and proactive demeanour | I formed the graph reflecting peak gain in the highest direction of each of the necessary points for frequency | B.3.7 |
| 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 |
| 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 made good terms with the project supervisor. I maintained a progress report of the project and discussed it with my team. | B.3.8 |
| 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 |
| 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 also lead my team to carryout work related to research, design, and simulation. I formed the report reflecting all the processes. | B.3.8 |
| I consulted my supervisor and project team for dealing with both managerial and technical issues. | A.3.9 |
| 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 maintained a friendly functioning atmosphere within the project period and employed all the activities. I also fulfilled the project sincerely with complete dedication and achieved the project motives. I also improved my communication skills and problem solving ability. | B.3.8 B.4 |
| I made good communication with the project supervisor and also the team members. | A.3.9 |
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