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Design of an electronic House Protection System

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The growth and development of electronic technology during the past couple of decades has been prolific. The application of electronic techniques has become widely used due to their high dependency and reliability when used in domestic and outdoor situations. The design of electronic house protection systems is a major activity among them.

The project is carried out with the objective to obviate or minimize different sources of hazards that might arise from unwelcome intruders, fires, floods, leakage of obnoxious gases, to protect electronic and electrical appliances from fluctuating voltage and to protect people from disease carrying animals such as mice and mosquitoes. Amongst the requirements are a power supply, a detection and protection system, a special information system and a remote control system. A regulated voltage for the system was derived from the main power supply and it is also arranged to be automatically provided from a battery during power failures or unscheduled blackouts. The detection system consisted of Infrared (IR) based intruder detector, fire and smoke detector with thermistors and light dependent resistor (LDR), gas detector with gas sensor and flood and rain detector with water sensitive two probes which are connected to an amplifier.The electronic circuit consisted of automatic shut off alarm circuit, automatic tape recorder, and a tele-guard circuit. The tele-guard circuit consisted of a relay switch and it is connected to the telephone for small adjustments. When a problem is determined by the detector circuit, the tele-guard automatically calls the pre-dialed number and the problem can be identified by the sound. The tele-guard is switched off automatically after a desired time. The automatic tape recorder records the sound in the house. Recorded sound can be heard by using a telephone via remote control. The remote control circuit is driven from a Dual Tone Multi Frequency (DTMF) tones.

The protection system is designed for trap to mice and to repel female mosquitoes and for fluctuating voltage. A special box with LDR sensor is used to close the lid whenever a mouse enters there. The frequency of male mosquitoes is taken to repel female mosquitoes which bite people after mating. A protection for fluctuating voltage is necessary and this is done by using comparators in order to disconnect or to change a path. An instrument power line connected through the relay output of a remote circuit could be switched on or off by a single telephone call. The project covers a wide range of conditions in order to assess simple, reliable and economical electronic circuits, which can be applied to a various domestic and industrial applications.

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