CHAPTER 4.
4. **Set Up For Noise Measurements Microcomputer Interface**

The data acquired for a specific duration of time through A/D converter resides in RAM of the microprocessor. The data is to be transferred to a personal computer to accomplish the task of processing of data and evaluation of results.

In this chapter the techniques used for transferring the data from the microprocessor to personal computer and the analysis of the stored data are presented.

The method of recording and evaluation of hourly noise at five busy locations of Anantapur is also described.

4.1. **Noise Recording And Reproduction:**

The vehicular traffic noise is first recorded on audio cassette using Philips N 2218 Automatic Tape Recorder. The signals are reproduced on reply. The output at the audio stage is passed through an A-weighing network[12].
Fig 4.1 (a) Schematic Block Diagram of Noise Sampling System

Microcode

Fig 4.1 (b) Microcomputer Microprocessor A/D Converter Interface
The frequency response of A-weighing network is almost equivalent to the human ear response and is recommended for analysis [24]. The output is rectified and filtered suitably for A/D conversion. The schematic block diagram is presented in Fig. 4.1. The details of A-weighing network and filter are presented in Annexure 2.

The port B and Port C of the PPI constitutes the data bits. Using counter-comparator the data is acquisitioned as already described in chapter 3. A sampling rate of 50 second has been used to measure the data. The signals so sampled (at the stipulated rate) are measured and stored. The stored information of 2 K bytes each is transferred to auxiliary memory of a microcomputer. The transfer is accomplished using STD bus connected to the parallel port of the Apple II E [15] or IBM PC [25]. The assembly level and basic programs of PC and microprocessor interface are presented in Annexure 3. The transfer of two Kilobyte data takes about thirty seconds. The auxiliary memory is 5 1/4 floppy disc of the personal computer. The data
Fig 4.2 FLOW CHART FOR NOISE PARAMETER EVALUATION

START

LOAD DATA FILES (2KBYTE LOCATION AND TIME WISE)

EVALUATE MEAN AND MEAN SQUARE

FIND STANDARD DEVIATION

EVALUATE L10, L90, LEQ, FIN LMIN & LMAX (IN VOLTS)

CONVERT ABOVE LEVELS INTO DBS

EVALUATE NC, TNL AND OTHER NOISE PARAMETERS

PRINT RESULTS

ALL HOURS COMPLETED?

NO

YES

ALL LOCATIONS COMPLETED?

NO

STOP

YES
so stored on the floppy disc can be accessed through data files. The data has been analysed using assembly level and basic program provided in Annexure 4.

The flow chart of the Basic routine used for analysis is provided in Fig. 4.2. If ADC card is available on the PC (e.g., Digiana card of Keonics Magnatision for IBM PC), the conditioned output can be directly analysed provided that analog levels are compatible. The noise measurements made using this equipment are presented in the next Chapter (5).

The data files of noise so stored are labelled and can be accessed through any suitable software either in basic or pascal or through d base 3. In the present work the files were handled through basic software presented in Annexure 4 as explained already.