

Chapter 4

Noise level Analysis – Festival Season

4. NOISE LEVEL ANALYSIS – FESTIVAL SEASON

4.1. Introduction:

India is a country with tremendous diversity. It is seen in its diverse culture, traditions, religions, and physical appearances and of course, language. Throughout the length and breadth of the country, there are rich cultural backgrounds that have exerted a powerful influence on the lives of people. This background has been a mixture of popular philosophy, tradition, history, and myths (Nehru, 1946). The uniqueness of this nation is its unity amidst diversity.

The festivals have been an occasion to bring the people together into the bonds of brotherly love and a sense of patriotism. As India is a home to people of various religions and culture, there are various occasions of festivity throughout the year. Among the prominent festivals, celebrated throughout the country, are Dipawali, Deshehra, Durgapuja, Holi, Id, and Christmas, to name a few.

Two of the festivals selected for the present study are Diwali and Ganesh Utsav, as they are the most popular occasions of festivity in Maharashtra. These are assumed to contribute significantly towards environmental concerns in the present area of study.

4.2. Diwali:

Diwali the “festival of lights” is perhaps the most spectacular of all Hindu festivals. The festival is a combination of great religious traditions combined with lots of fun and merry making. It is celebrated to commemorate the triumph of good over evil, light over darkness. The word “Diwali” is derived from the Sanskrit word “Deepawali”. ‘Deep’ means light and ‘Avali’ means a row, i.e. a row of light.

It is also said to be the festival of crackers. A traditional way of symbolically expressing the victory over evil. But now the question is, whether it is necessary to demonstrate the joy through the thunders of crackers and atom bombs (cracker)? as it has become a fashion today. There have been increased reports of inconvenience to people due to the noise and air pollution caused due to the crackers. (Bhatnagar, 2000).

In order to study the status of noise in the city during Diwali, nine areas comprising of 67 sampling stations (table 4.1) were selected. These areas constituted only of the commercial and the residential areas.

Table 4.1: The sample size of the data collected for Diwali

Area code	Area category	No.of stations	No. of readings
A	Commercial	45	3240
B	Residential	22	1584
		TOTAL	4824



The use of crackers by the children also has serious threats of accidents. The cases of burns and loss of sight due to the careless ways of handling the crackers are today a common sight during Diwali. Apart from the accidents, there is also considerable amount of smoke and air pollution caused due to the bursting of crackers. Besides the crackers and the fire works is becoming increasingly expensive and out of the reach of average man, despite he is compelled to go for it for the sake of his children, But these aspects have not been touched as they are out of the scope of the present study.

Average of raw data

The total numbers of readings taken are distributed among twelve different time intervals. The average of the total number of readings taken at each time slot is given in the table 4.2. This will give an overview of the average readings recorded during different time periods throughout the day, at each sampling station.

Table 4.2: Average Noise Levels at different sampling stations in Kolhapur city during Diwali

Area	site No.	Sampling sites	7 a.m.	9 a.m.	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	9 p.m.	11 p.m.	1 a.m.	3 a.m.	5 a.m.
Shivaji road [C]	1	Padma Theatre (Jn)	69	77	79	76	77	82	77	80	80	45	45	61
	2	Bindu Chowk (Jn)	75	70	71	73	77	78	86	87	87	45	45	55
Bhausaingi Road [C]	3	Regal Electronics (Mr)	73	72	76	75	72	78	82	84	84	40	40	64
	4	Shivaji Chowk (Jn)	72	77	76	75	71	78	84	85	85	47	47	66
	5	Juna Rajwada (Jn)	70	80	77	73	76	78	77	74	74	40	46	63
	6	Mahanagar Palika (Jn)	72	79	84	72	77	76	84	83	83	47	47	62
Mahadwar Road [C]	7	C.P.R. Hospital (Hn)	66	72	80	74	73	71	66	68	68	40	40	57
	8	Khari Corner (Jn)	75	69	69	68	68	100	98	97	93	44	44	62
	9	Phadke Book Centre (Jn)	72	70	71	74	75	77	72	71	71	47	47	62
Gangavesh [C]	10	Gwalior Suitings (Mr)	59	68	68	70	72	84	83	82	82	40	40	58
	11	Dressland (Mr)	64	70	70	73	72	83	84	88	87	43	43	62
	12	Raymond Suitings (Mr)	72	71	71	69	71	86	86	89	89	41	41	64
	13	Gangavesh Chowk (Jn)	76	81	81	68	73	80	80	83	83	48	48	69
	14	Shahir Shandul School (Ed)	70	82	84	68	71	83	92	92	91	40	40	59
	15	Market (Mr)	73	80	81	78	82	78	83	86	86	45	45	69
	16	Gangavesh Bus Stop (Jn)	81	81	84	78	79	79	80	81	81	48	48	70
	17	Pethe Classes (Sb)	78	84	85	67	66	85	79	82	82	41	41	70
Shivaji Peth [R]	18	Archies Gallery (Mr)	78	73	71	69	75	86	90	90	90	40	40	80
	19	Hutatma Nivruthi Aadurkar Chowk (Jn)	72	65	70	66	68	73	84	86	86	42	42	75
	20	Daulatrao Bhoale School (Ed)	75	69	68	68	71	77	84	85	85	43	43	72
	21	New College (Ed)	83	66	59	68	66	80	85	89	89	45	44	79
	22	Buvamaster Chowk (Sb)	77	73	70	77	69	92	94	98	96	46	46	71
	23	Pisces Padmaraje Park (Mr)	65	69	65	64	61	69	73	76	76	47	47	70
	24	Rankala Tower (Jn)	83	82	81	75	79	86	88	87	86	48	47	83
	25	Janata Bazar (Jn)	84	82	71	72	71	72	72	74	74	47	47	70
Rajarampuri [R]	26	Castle (Sb)	60	67	64	71	65	65	80	70	70	46	46	86
	27	Titus (Mr)	66	81	73	75	71	71	71	72	72	46	46	57
	28	Channel 9 (Mr)	70	73	75	71	71	78	73	75	75	47	47	77
	29	Way In Corner (Mr)	80	72	69	74	75	75	75	76	76	45	45	58
	30	Petrol Pump (Mr)	64	73	58	61	74	73	75	77	77	47	47	59
	31	Patne High School (Ed)	57	57	67	62	61	63	73	66	66	44	44	57
	32	Canara Bank (Sb)	79	68	74	71	67	68	75	73	73	44	44	58
	33	Kamala College (Ed))	74	78	68	71	77	74	81	78	77	46	46	58
	34	Takala Junction (Jn)	77	86	69	63	73	74	71	73	73	46	46	69
	35	Bharat Sahakari Hsg. Soc. Hall. (Sb)	69	65	64	67	68	68	70	72	71	47	47	68
	36	Oriental High School(Ed)	59	71	70	73	65	68	63	70	70	45	45	63
	37	Hall (Sb)	79	70	64	60	68	71	73	70	70	47	47	59
Laxmipuri [C]	38	Shiv Shakti Corner (Jn)	76	74	75	74	71	76	89	88	88	47	47	54
	39	Mahalaxmi Bakery (Sb)	74	76	74	73	71	78	90	88	88	46	46	58
	40	Hotel Sema (Sb)	80	77	74	77	70	72	100	100	98	46	46	53

Table 4.2: Average Noise Levels at different sampling stations in Kolhapur city during Diwali (contd)

Area	site No.	Sampling sites	7 a.m.	9 a.m.	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	9 p.m.	11 p.m.	1 a.m.	3 a.m.	5 a.m.
	41	Uma Theatre (Jn)	70	72	72	66	70	70	80	81	81	42	42	58
	42	Balappa Annappa Chougule & Company (Sb)	73	67	72	64	65	71	84	84	84	43	43	52
	43	The Ravi Co-operative Bank (Sb)	67	73	68	63	70	75	81	87	87	44	44	47
	44	Anandasharm Hotel (Mr)	70	79	78	70	70	77	79	79	79	42	42	62
	45	Maharana Pratap Bus Terminus (Jn)	71	75	75	72	71	78	80	81	81	47	47	54
	46	Zilla Koshgar Karyalay (Jn)	76	77	75	74	76	77	80	81	81	45	45	67
	47	Hotel Neelam (Mr)	73	73	73	72	71	73	83	83	83	45	45	75
Trabai Park [R]	48	Trabai Garden (Mn)	58	65	64	61	63	67	67	74	74	43	43	42
	49	Telephone Bhavan (Sb)	48	73	55	56	59	58	69	64	64	41	41	47
	50	Kriplani Hospital (Hp)	59	69	61	61	60	64	69	80	79	48	48	46
	51	Virshali Hotel (Mn)	74	71	66	61	67	64	71	76	72	40	40	59
	52	Eagle Tiles (Sb)	51	63	63	59	58	59	72	75	75	45	45	46
	53	Himmat Bahadur Colony (Mn)	54	71	62	67	60	62	67	72	69	48	48	47
	54	Aditya Corner (Jn)	67	70	59	66	67	64	72	74	72	41	41	43
	55	S.S.Bhosale Path (Sb)	51	72	58	60	56	58	60	71	71	47	47	46
	56	Kairali (Sb)	64	66	56	56	59	61	64	63	63	46	46	44
Shahupuri [C]	57	B.T. College (Ed)	79	76	74	78	71	77	78	77	74	46	46	67
	58	Bagal Chowk (Jn)	73	75	79	76	74	76	72	79	77	42	42	57
	59	Shahupuri Market (Mr)	75	75	77	71	73	80	72	77	77	43	43	62
	60	Shashi Plaza (Sb)	72	75	86	68	71	75	69	75	73	44	44	68
	61	Subhash Colour Lab (Mr)	76	70	71	70	74	69	75	70	70	42	42	60
	62	Radhakrishna Temple (Sb)	74	69	78	75	71	78	76	78	76	47	47	61
	63	Allurkar Transport (Sb)	100	65	78	67	71	84	70	67	67	45	45	93
	64	Karmalkar & Company (Sb)	67	68	77	68	62	71	77	73	72	45	45	64
	65	Nidan (Sb)	70	66	81	65	78	85	78	71	71	47	47	66
	66	Vyapar Peth (Sb)	100	71	77	69	77	73	68	64	64	45	45	79
	67	Railway Phatak Market (Jn)	70	70	81	73	75	70	69	73	72	44	44	72

Note: Jn = Junction
Sb = Sublane
Mr = Main road
Ed = Educational Institution
Hp = Hospital
In = Industry
C = Commercial Area
R = Residential Area

Maximum and Minimum Readings:

The maximum and the minimum readings recorded at each sampling station have been stated in the table 4.3. It is found that the maximum reading recorded during the day in the residential area was as high as 118 dB, where the permissible limit is 55 dB and in the night 106 dB where the permissible limit is only 45 dB. The maximum reading recorded in the commercial area during the day was 112 dB, where the permissible limit is 65 dB and in the night 115 dB, where the permissible limit is only 55 dB.

This state of noise levels prevailing during the Diwali time is attributed to the loud sounds produced by the bursting of crackers. The crackers sound throughout the day, but it is significant between 5a.m. to 7 a.m. in the morning and during the evening hours of 5 p.m. to 11 p.m.

Table 4.3: Maximum and minimum recorded readings during Diwali

Sampling Stations	Site No.	Day		Night	
		Min	Max	Min	Max
Padma Theatre (Jn)	1	60	90	44	90
Bindu Chowk (Jn)	2	68	94	39	94
Regal Electronics (Mr)	3	64	94	38	92
Shivaji Chowk (Jn)	4	68	96	46	96
Juna Rajwada (Jn)	5	66	94	44	78
Mahanagar Palika (Jn)	6	60	100	46	90
C.P.R. Hospital (Hp)	7	62	88	38	76
Khari Corner (Jn)	8	62	104	42	100
Phadke Book Centre (Jn)	9	62	88	44	78
Gwalior Suitings (Mr)	10	56	110	39	100
Dressland (Mr)	11	58	108	42	98
Raymond Suitings (Mr)	12	60	100	39	98
Gangavesh Chowk (Jn)	13	66	90	46	90
Shahir Shardul School (Ed)	14	56	106	39	98
Market (Mr)	15	64	100	44	92
Gangavesh Bus Stop (Jn)	16	68	96	46	92
Pethe Classes (Sb)	17	58	96	40	94
Archies Gallery (Mr)	18	58	102	39	102
Hutatma Nivruthi Aadurkar Chowk (Jn)	19	60	100	40	100
Daulatrao Bhosale School (Ed)	20	60	96	42	90
New College (Ed)	21	46	98	42	98
Buvamaster Chowk (Sb)	22	60	118	44	106
Pisses Padmaraje Park (Mr)	23	52	88	45	82
Rankala Tower (Jn)	24	68	92	46	92
Janata Bazar (Jn)	25	64	100	46	80
Castle (Sb)	26	54	90	42	100
Titus (Mr)	27	54	98	44	76
Channel 9 (Mr)	28	56	90	46	84
Way In Corner (Mr)	29	64	102	44	88
Petrol Pump (Mr)	30	54	88	46	84
Patne High School (Ed)	31	50	84	42	78
Canara Bank (Cb)	32	58	100	42	90
Kamala College (Ed)	33	64	96	42	82
Takala Junction (Jn)	34	52	102	44	84
Bharat Sahakari Hsg. Soc. Hall. (Sb)	35	58	80	46	78
Oriental High School (Ed)	36	52	94	44	82
Hall (Sb)	37	58	92	46	76
Shiv Shakti Corner (Jn)	38	62	96	46	96
Mahalaxmi Bakery (Sb)	39	66	104	45	100
Hotel Sema (Sb)	40	66	110	44	102

Table 4.3 (contd): Maximum and minimum recorded readings during Diwali

Sampling Stations	Site No.	Day		Night	
		Min	Max	Min	Max
Uma Theatre (Jn)	41	62	86	40	86
Balappa Annappa Chougule & Company (Sb)	42	60	94	42	94
The Ravi Co-operative Bank (Sb)	43	56	100	42	100
Anandasharm Hotel (Mr)	44	62	102	40	100
Maharana Pratap Bus Terminus (Jn)	45	66	92	46	92
Zilla Koshgar Karyalay (Jn)	46	68	96	43	96
Hotel Neelam (Mr)	47	62	94	40	94
Trabai Garden (Mn)	48	52	84	42	84
Telephone Bhavan (Sb)	49	46	80	39	78
Kriplani Hospital (Hp)	50	50	90	42	86
Vrishali Hotel (Mn)	51	52	92	39	80
Eagle Tiles (Sb)	52	48	88	44	88
Himmat Bahadur Colony (Mn)	53	44	88	42	80
Aditya Corner (Jn)	54	54	88	40	80
S.S.Bhosale Path (Sb)	55	42	96	44	92
Kairali (Sb)	56	52	80	44	76
B.T. College (Ed)	57	64	102	44	78
Bagal Chowk (Jn)	58	64	90	40	90
Shahupuri Market (Mr)	59	62	100	42	84
Shashi Plaza (Sb)	60	60	102	42	86
Subhash Colour Lab (Mr)	61	60	90	40	78
Radhakrishna Temple (Sb)	62	56	96	46	90
Allurkar Transport (Sb)	63	60	112	43	115
Karmalkar & Company.(Sb)	64	54	92	40	78
Nidan (Sb)	65	56	104	46	90
Vyapar Peth (Sb)	66	56	110	45	100
Railway Phatak Market (Jn)	67	62	100	43	94

Note: Jn = Junction

Sb = Sublane

Mr = Main road

Ed = Educational institution

Hp = Hospital

In = Industry

Noise levels at each time interval:

The noise levels for each time slot has been calculated for each area and is stated in the table 4.4. It is found that the ambient noise levels during the day ranges between 68dB to 107dB in the residential areas, where the standard limit is 55dB and during the night it ranges from 44dB to 100 dB, where the standard limit is 45dB. It is observed that the sound levels dip below 47 dB only during the night hours of 1 a.m. and 3 a.m. (could be low before 5 a.m.). The ambient noise levels during the day in the commercial areas ranged between 68 dB to 102 dB, the standard limit being 65 dB and during the night the levels ranged between 44dB to 100 dB, the standard being 55 dB. As in the case of residential areas, the sound levels in the commercial areas dipped below 46dB during the night hours of 1 a.m. and 3 a.m. (could be low before 5 a.m.).

The trends of noise levels existing throughout the day in each of the areas, have been compared with the noise standards, and are shown in the fig 4.1(a) to fig 4.1(i). It is evident from the fig 4.1(a to i), that it in almost all the areas irrespective of residential areas or the silent locations, the noise levels in most of the cases are above 70 dB. This shows the seriousness and the magnitude of the problem.

Table 4.4: AMBIENT NOISE LEVELS IN DIFFERENT AREAS DURING DIWALI

Areas	7 A.M.	9 A.M.	11 A.M.	1 P.M.	3 P.M.	5 P.M.	7 P.M.	9 P.M.	11 P.M.	1 A.M.	3 A.M.	5 A.M.
Shivaji road [C]	74	71	76	74	73	79	82	83	83	45	45	66
Bhausaingi Road [C]	71	78	85	73	76	80	83	82	82	46	46	65
Mahadwar Road[C]	74	68	68	71	70	92	96	92	90	44	44	69
Gangavesh [C]	79	84	83	72	83	82	90	87	86	46	46	75
Shivaji Peth [R]	93	81	81	81	81	94	102	107	99	46	45	87
Rajarampuri [R]	93	92	81	80	80	81	90	85	84	47	47	90
Laxmipuri [C]	88	83	82	78	78	81	98	99	97	46	46	76
Trabai Park [R]	78	82	72	70	68	70	75	84	82	46	46	60
Shahupuri [C]	102	85	91	77	88	90	82	82	80	46	46	100

Where C = Commercial area
R = Residential area

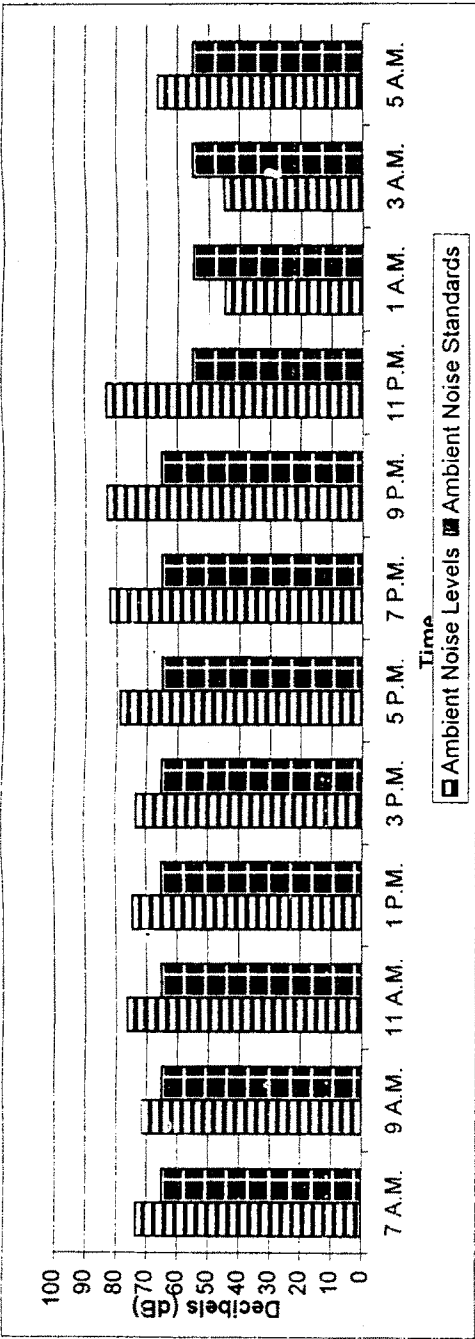


Fig.4.1(a) : Comparison Chart of ambient noise levels & ambient noise standards in Shivaji Road area during Diwali.

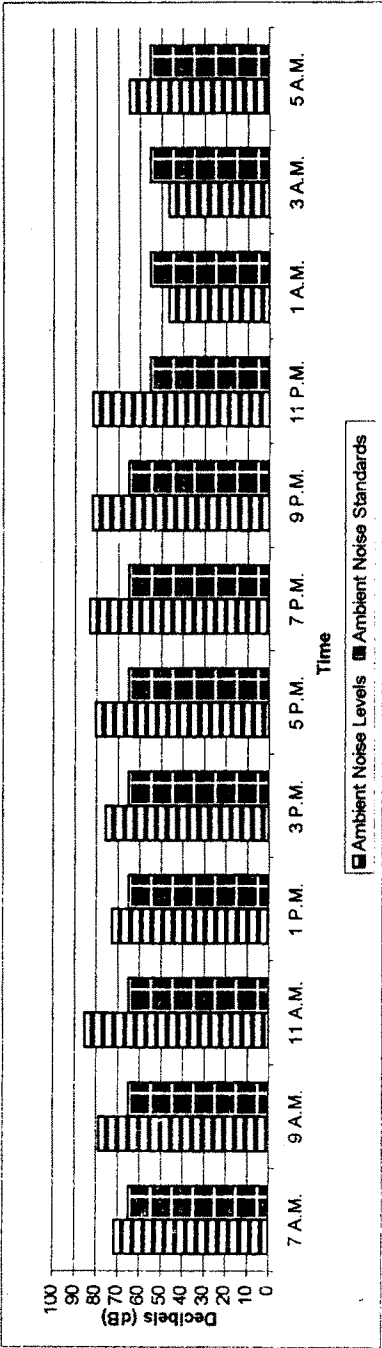


Fig.4.1(b) : Comparison Chart of ambient noise levels & ambient noise standards in Bhausaingi Road area during Diwali.

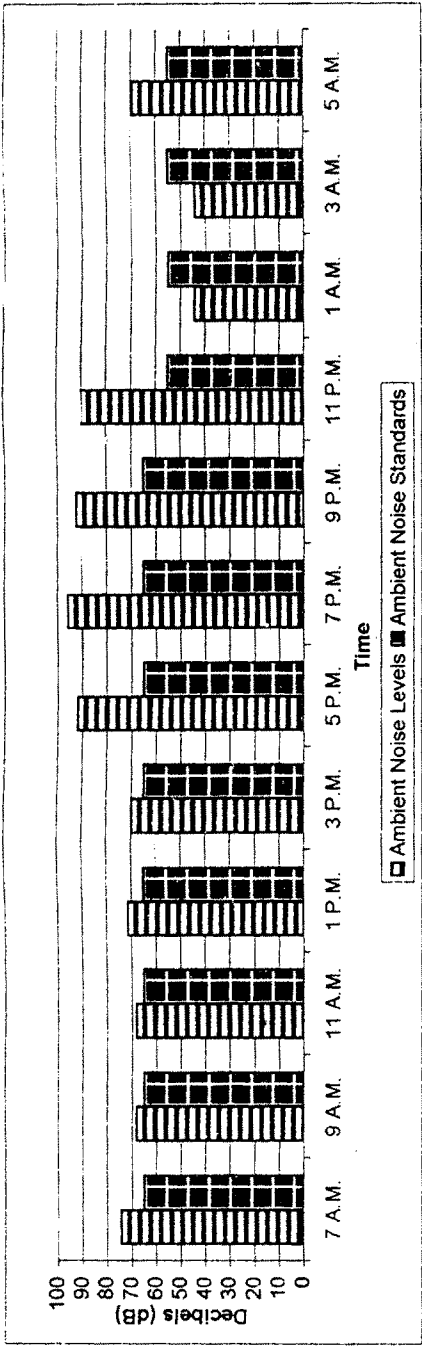


Fig.4.1(c) : Comparison Chart of ambient noise levels & ambient noise standards in Mahadwar Road area during Diwali

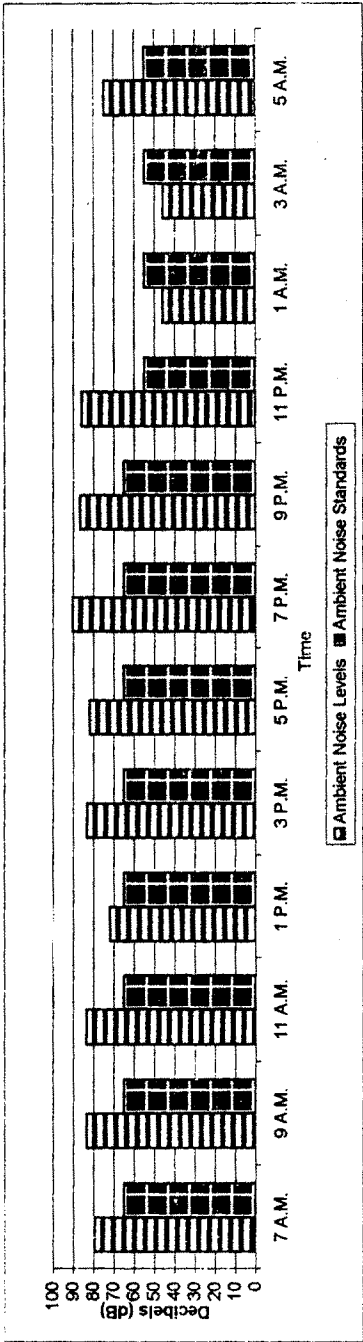


Fig.4.1(d) : Comparison Chart of ambient noise levels & ambient noise standards in Gangavesh area during Diwali

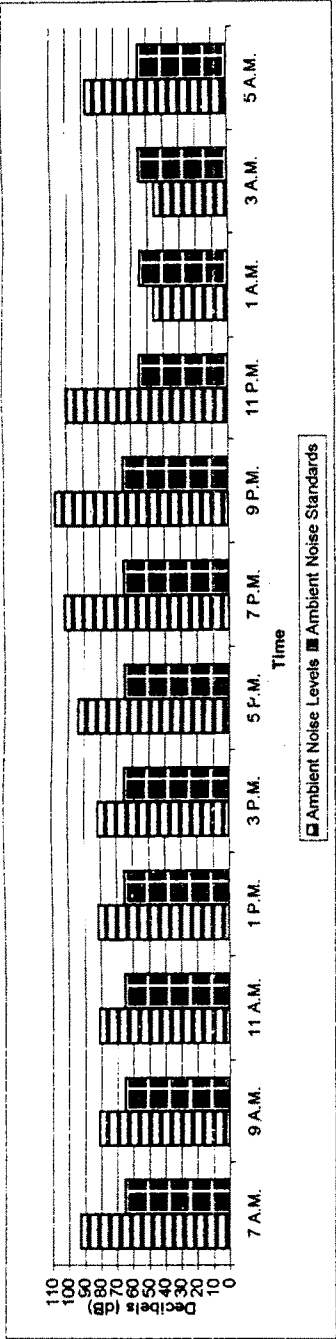


Fig.4.1(e) : Comparison Chart of ambient noise levels & ambient noise standards in Shivaji Peth area during Diwali

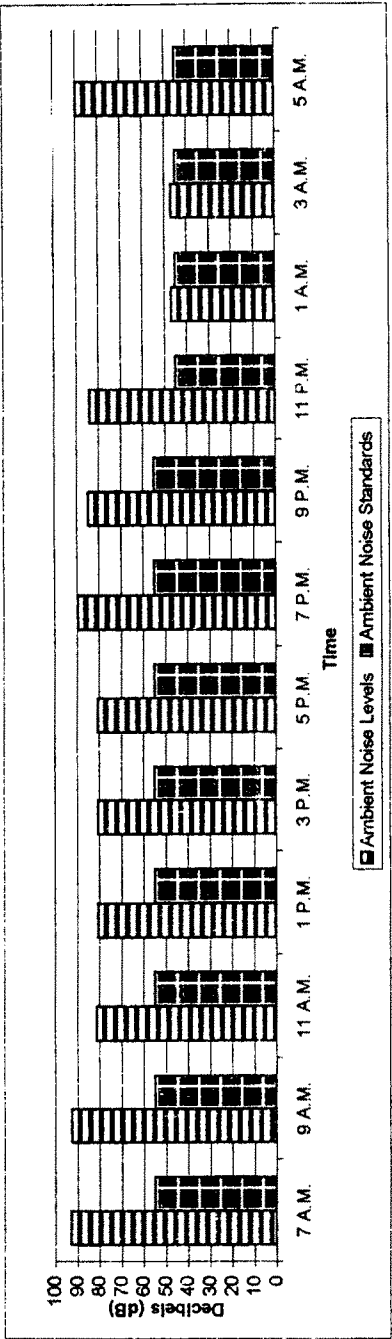


Fig.4.1(f) : Comparison Chart of ambient noise levels & ambient noise standards in Rajarampuri area during Diwali

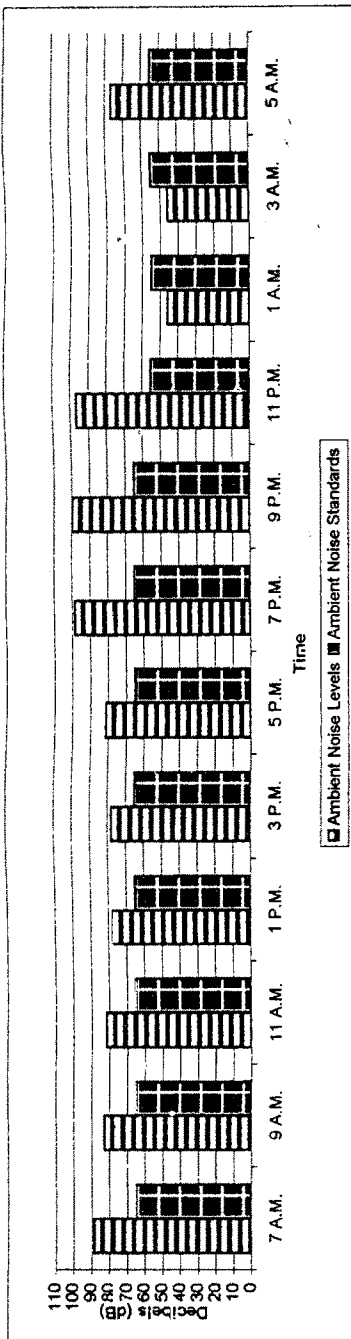


Fig.4.1(g) : Comparison Chart of ambient noise levels & ambient noise standards in Laxmipuri area during Diwali

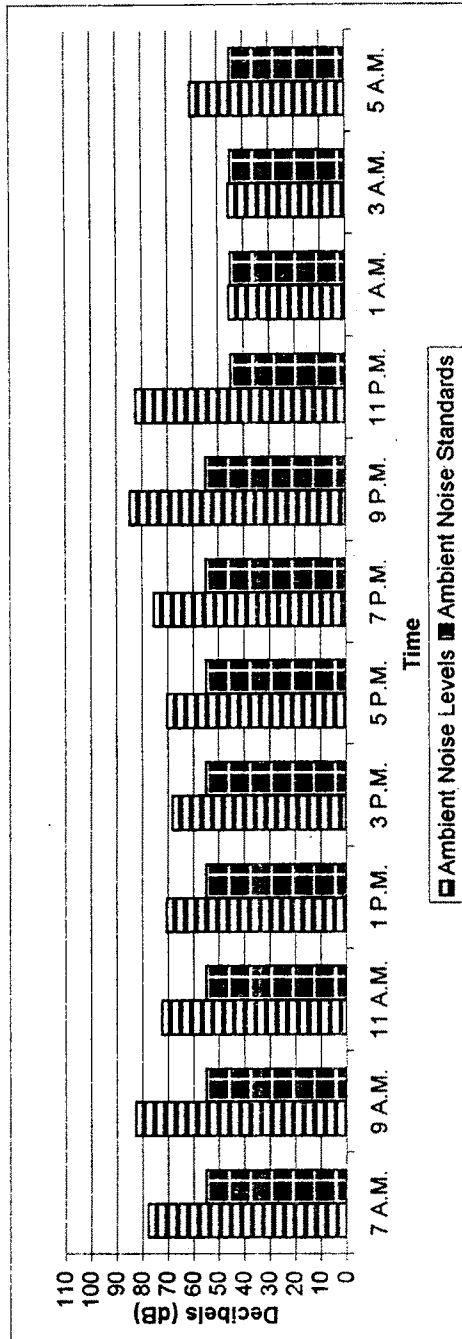


Fig.4.1(h) : Comparison Chart of ambient noise levels & ambient noise standards in Tarabai Park area during Diwali

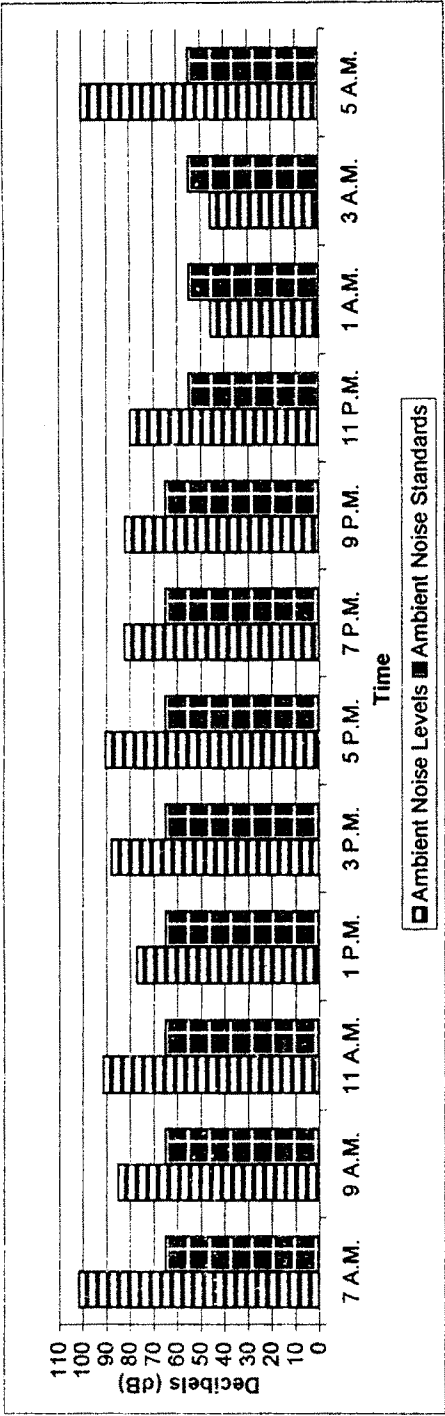


Fig.4.1(i) : Comparison Chart of ambient noise levels & ambient noise standards in Shahupuri area during Diwali

Noise levels for Day and Night:

The ambient equivalent energy noise levels for the days and nights have been estimated and it is stated in table 4.5. The commercial areas show noise levels during the day hours in the range of 84 dB to 93 dB and the night hour levels ranged from 79 dB to 94 dB. Similarly the residential areas studied, showed noise levels during the day in the range of 76 dB to 96 dB, while in the night hours it ranged between 74 dB to 90 dB.

The status of noise in each area has been compared with the noise standards and is shown in fig 4.2 (a to i). As each area is unique in its own way, these comparative depictions will help comprehend the noise scenario in each of the studied areas.

Table 4.5: Ambient noise levels for day and night during Diwali

AREAS	DAY	NIGHT
Shivaji road [C]	84	82
Bhausinji Road [C]	84	79
Mahadwar Road [C]	93	87
Gangavesh [C]	89	84
Shivaji Peth [R]	96	90
Rajarampuri [R]	83	79
Laxmipuri [C]	90	88
Trabai Park [R]	76	74
Shahupuri [C]	93	94

Where C = Commercial area
R = Residential area

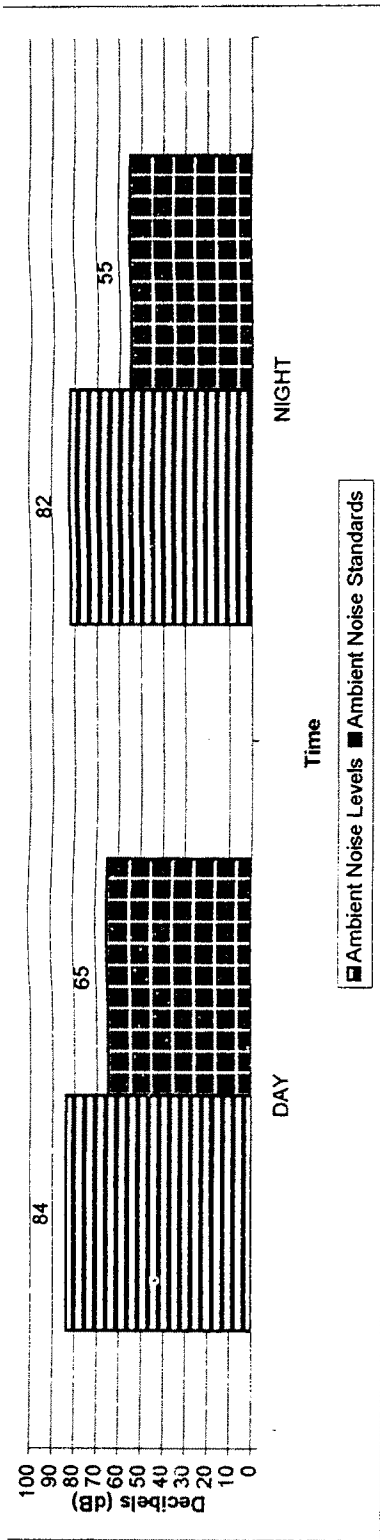


Fig 4.2(a): Comparison chart of ambient noise levels and ambient noise standards in Shivaji Road area during Diwali

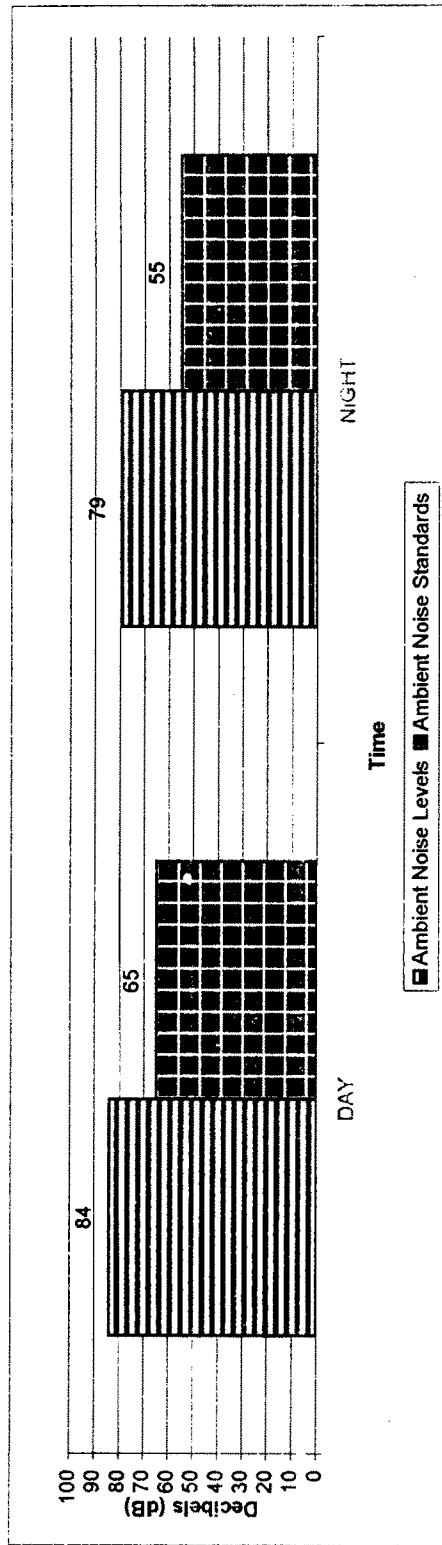


Fig 4.2(b): Comparison chart of ambient noise levels and ambient noise standards in Bhausinji Road area during Diwali

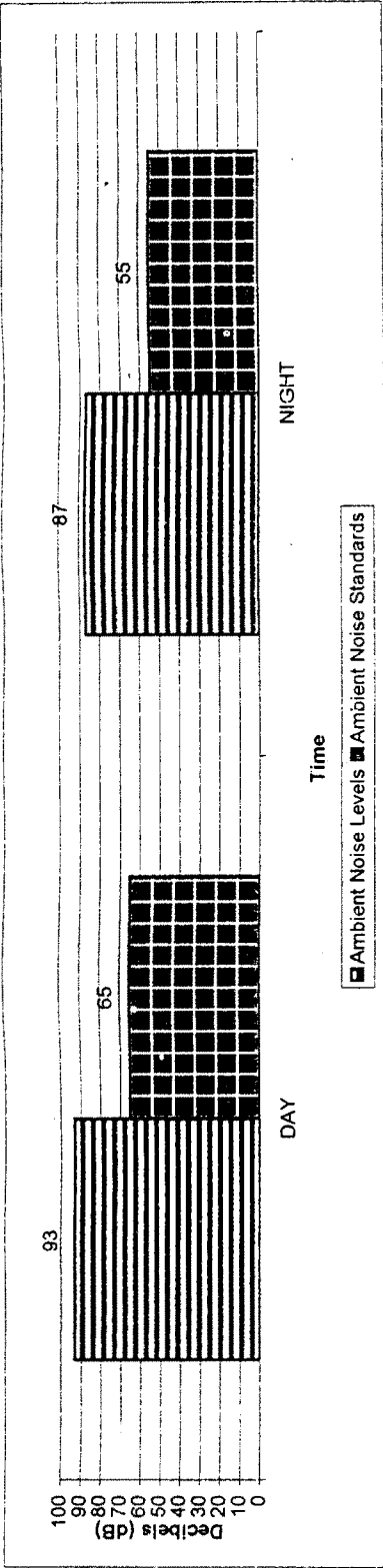


Fig 4.2(c): Comparison chart of ambient noise levels and ambient noise standards in Mahadwar Road area during Diwali

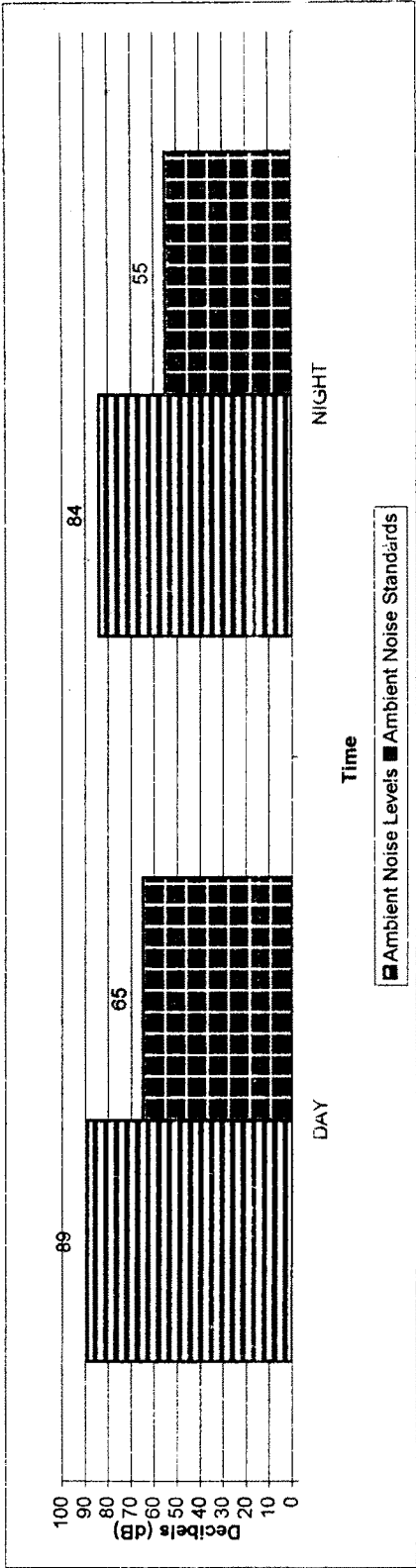


Fig 4.2(d): Comparison chart of ambient noise levels and ambient noise standards in Gangavesh area during Diwali

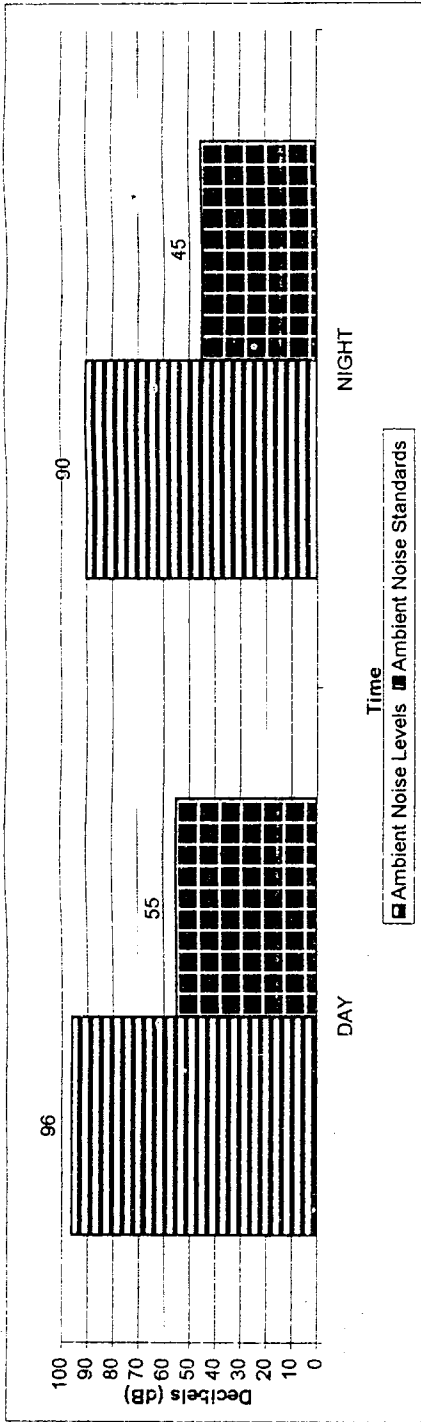


Fig 4.2(e): Comparison chart of ambient noise levels and ambient noise standards in Shivaji Peth area during Diwali

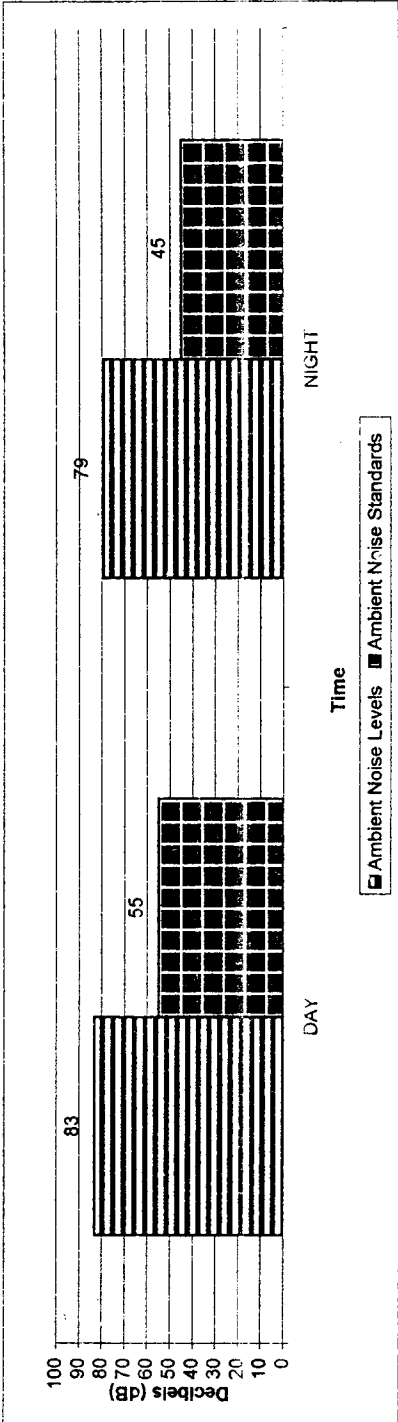


Fig 4.2(f): Comparison chart of ambient noise levels and ambient noise standards in Rajarampuri area during Diwali

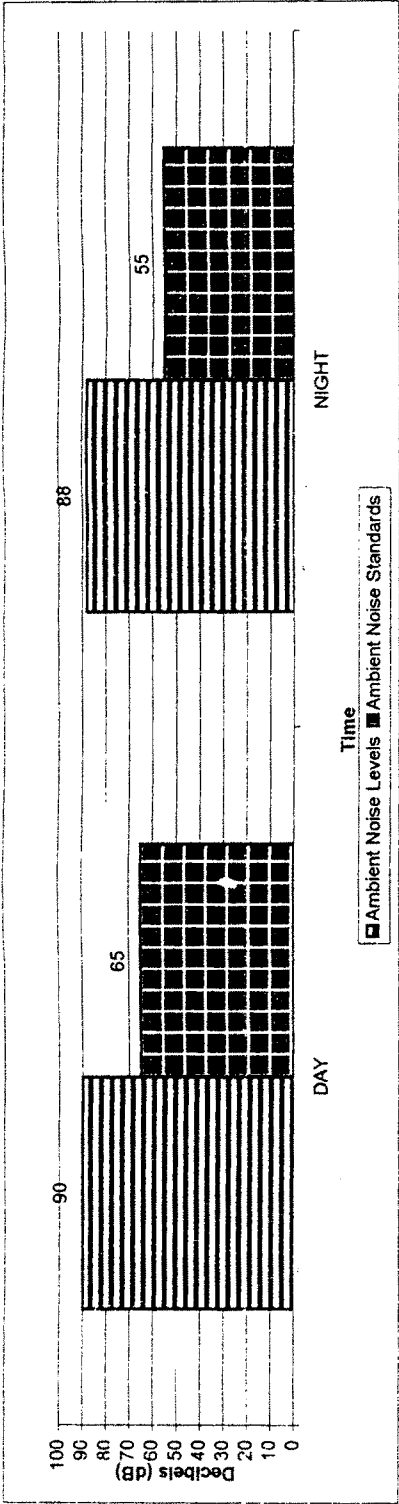


Fig 4.2(g): Comparison chart of ambient noise levels and ambient noise standards in Laxmipuri area during Diwali

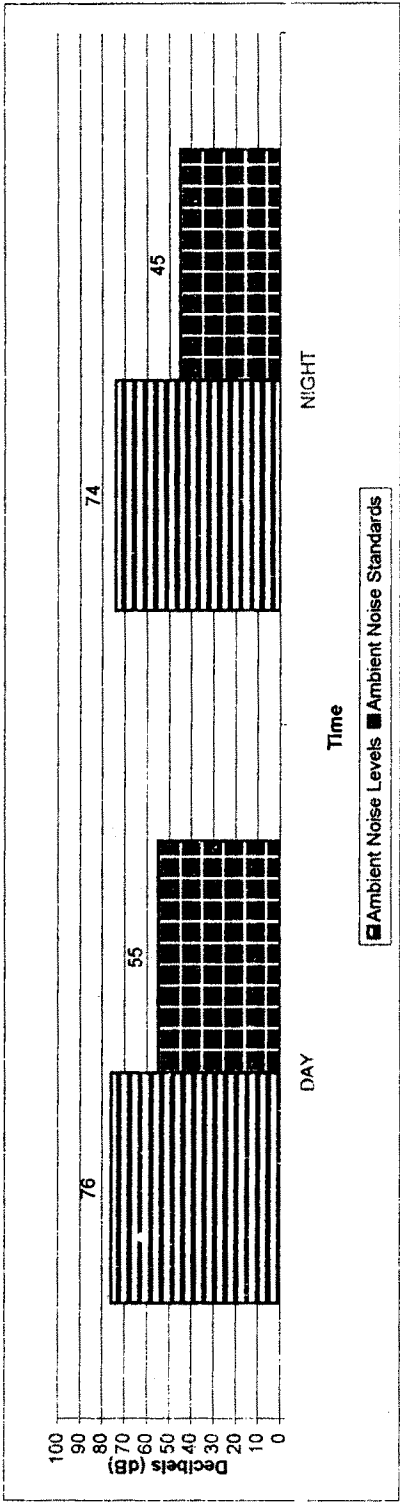


Fig 4.2(h): Comparison chart of ambient noise levels and ambient noise standards in Tarabai Park area during Diwali

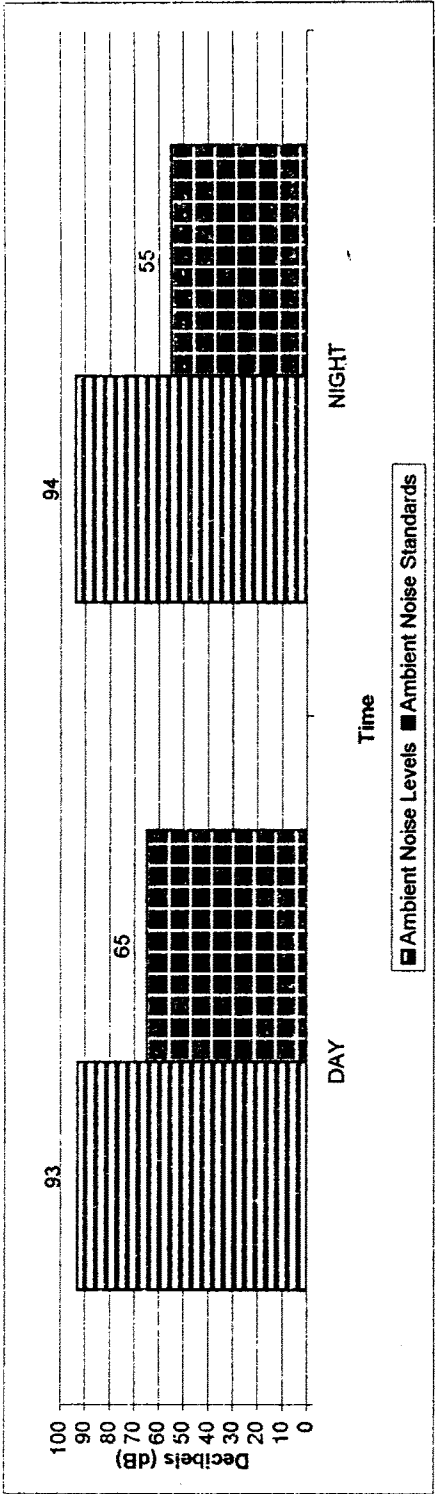
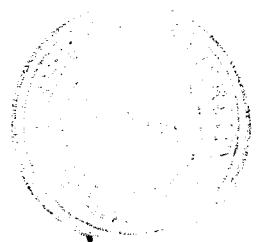


Fig 4.2(I): Comparison chart of ambient noise levels and ambient noise standards in Shahupuri area during Diwali

Noise level for each zone:

Based on the different areas studied, the noise levels prevailing in the commercial areas and the residential areas in Kolhapur city, compared with the noise standards, have been stated in the fig 4.3 (a) & fig 4.3 (b). It is observed that the average energy equivalent noise levels during Diwali in the commercial areas of Kolhapur city is about 89 dB during the day and 86 dB during the night. Similarly, the average energy equivalent noise level in the residential areas is about 85 dB during the day and 81 dB during the night.



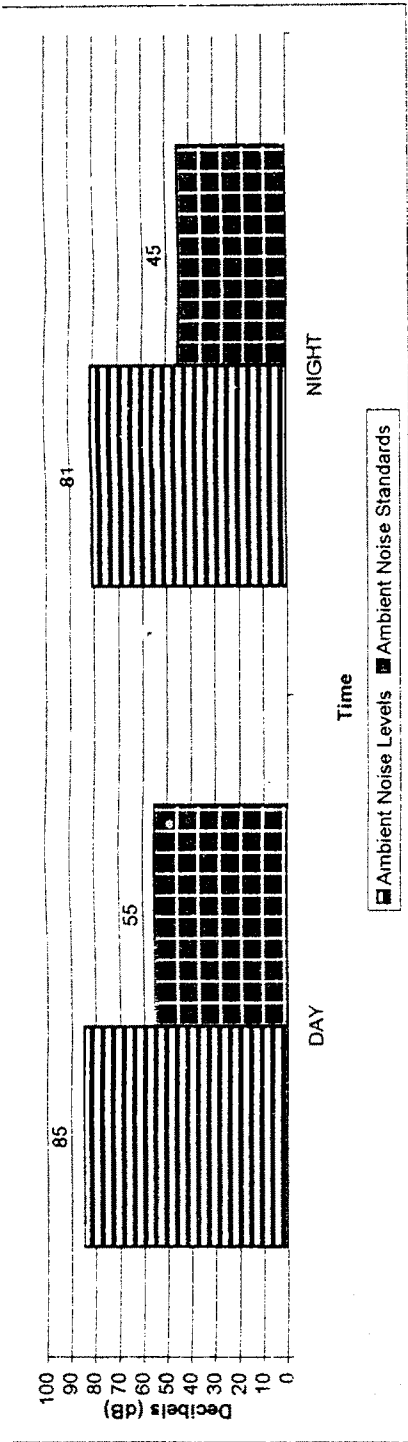


Fig 4.3(a): Comparison chart of ambient noise levels and ambient noise standards in Residential area during Diwali

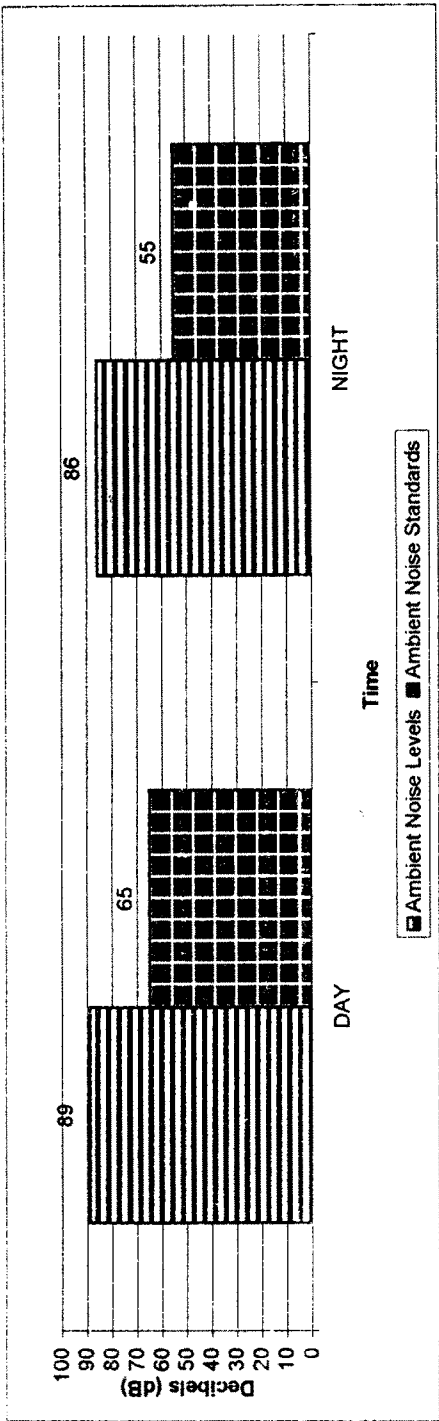


Fig 4.3(b): Comparison chart of ambient noise levels and ambient noise standards in Commercial area during Diwali

Noise level increase:

The actual increase in noise levels during day and night hours of Diwali in Kolhapur City, from the noise standards laid down by the pollution control board is stated in table 4.6. It was observed that the increase in noise levels in residential and commercial areas during the day was 30 dB and 24 dB respectively, while in the night hours there was an increase of 36 dB and 31 dB in the residential and commercial areas respectively.

Table 4.6: Increase in noise level from the standard level during Diwali.

Area	D-DAY (dB)	D-NIGHT (dB)
Residential	30	36
Commercial	24	31

* Note: D-Day = Diwali day
D-night = Diwali night.

The comparison between the increase in the noise level during the non-festival time and the Diwali time is stated in fig 4.4. It is observed that the increase in noise level during the Diwali day is twice the increase as much during the non-festival day, and the increase during the Diwali night in residential area is **five times** the increase during non-festival night. In case of the commercial area, the increase in noise level during the Diwali night is almost **eight times** the increase during non-festival night.

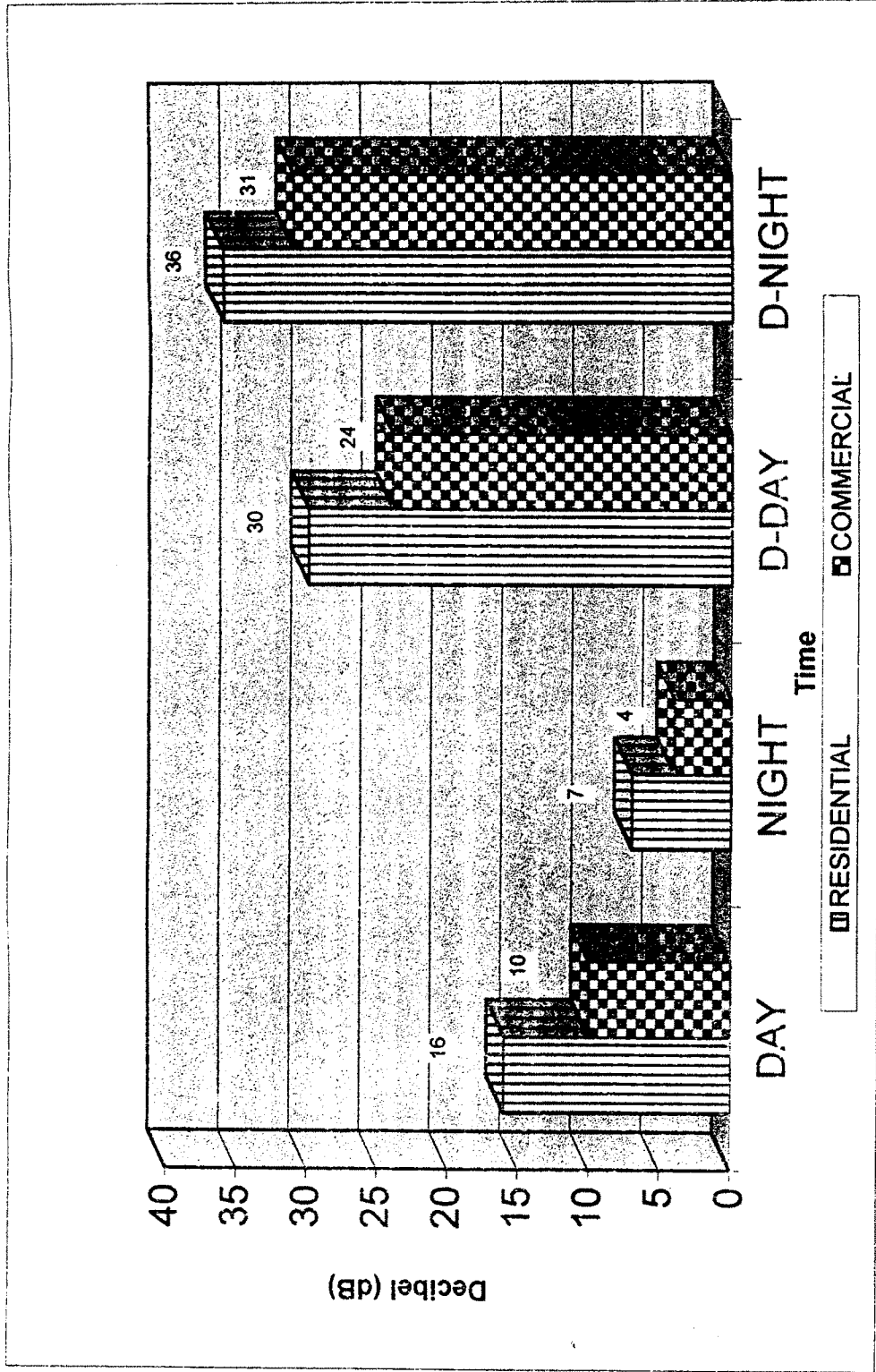


Fig. 4.4: Increase in Noise Levels during Non Festival and Diwali Times from the Noise Standards

4.2. Ganesh Utsav:

The other popular festival of Maharashtra is the Ganesh Utsav, celebrated with great religious fervour and enthusiasm. It has been celebrated since 1893, when Sardar Nanasaheb Khasgiwale first publicly celebrated it in Pune. Noted Indian freedom fighter Lokmanya Tilak, then thought it to be the best means to unite the people, especially the youths in cords of brotherly love and strengthen the freedom movement (Toprani, 1999) Therefore he initiated and encouraged the Sarvajanik Ganesh and gave a new direction to the festivities by way of its religious and cultural fervour. The festival has progressed ever since into a ten day long extravaganza, bringing together people from different walks of life, onto a platform of creative expressions, team endeavours and local community get-togethers

The ten-day festival starts with the ceremonial procession and installation of the Elephant headed Hindu god lord Ganesh, in the homes as well as in the sarvajanik pandols specially set up for the purpose. The idols are of varying shapes and sizes, ranging from around one foot to twenty-one feet tall, carefully crafted in different postures. The major attractions during the celebrations are the spectacular tableaux, set up by the tarun mandals (youth groups), which may have themes from mythological stories or the significant current issues, either local or global. The celebrations go on throughout the night, and people move out in large numbers to have a glimpse of the various tableaux and the idols.

Finally, the celebrations come to an end with the ceremonial procession leading to the immersion of the idols into the local rivers, lakes or ponds.

The present day celebrations although have been a cause of concern. The extensive and liberal use of the loud speakers has become a cause of inconvenience to the people. The concern has aggravated due to the unhealthy competition that exists between the different tarun mandals. It is a common site at many places today, to observe at least three to four Ganesh mandals within a radius of twenty-five meters, each blaring away the loud speakers at its maximum. The victim is the poor listener, unable to comprehend the identity of the songs played. Therefore, this has been a major cause of noise pollution during Ganesh Utsav celebrations.

Apart from the problem of noise pollution, the present ways of celebration of Ganesh Utsav also contribute towards water pollution, air pollution and other socio-environmental problems. But these aspects though significant from the environmental point of view, have not been touched, as they are out of the limits of the present study.

In order to study the status of noise in the city during Ganesh Utsav, twenty areas comprising of 135 sampling stations (table 4.7) were selected. These areas constituted the commercial areas, the residential areas, industrial areas and the silent zone.

Table 4.7: The sample size of the data collected for Ganesh Utsav

Area code	Area category	No.of stations	No. of readings
A	Industrial	5	360
B	Commercial	55	3960
C	Residential	69	4968
D	Silent	6	432
	TOTAL	135	9720

This state of noise levels prevailing during the Ganesh utsav is attributed mainly to the sounds emanating from the loud speakers at each Ganesh mandal. Apart from the loud speakers, the traffic congestions created due to the road blockages and diversions along with other miscellaneous factors also contribute towards noise pollution.

The loud speakers start playing from about 7:00 in the morning, initially with bhajans and kirtans, slowly switching over to film songs. This continues throughout the day and goes on to about 1:00 a.m. in the morning during the last three to four days before immersion. As the people move out in large numbers during the night to watch the various scenes (tableaus), it is observed that the noise levels shoot up during the night hours from about 9:00 p.m. to 1:00 a.m.

Average of raw data:

The total numbers of readings taken are distributed among twelve different time intervals. The average of the total number of readings taken at each time slot is given in the table 4.8. This will give an overview of the average readings recorded during different time periods throughout the day, at each sampling station.



Area	Site No.	Sampling sites	7 a.m.	9 a.m.	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	9 p.m.	11 p.m.	1 a.m.	3 a.m.	5 a.m.
Bhausaingi Road [C]	41	Shivaji Chowk (Jn)	69	73	72	72	76	77	83	82	80	81	70	67
	42	Juna Rajwada (Jn)	62	69	73	71	71	72	76	72	80	82	71	62
	43	Mahanagar Palika (Jn)	67	73	72	74	73	74	80	68	63	62	69	69
	44	C.P.R. Hospital (Hp)	67	68	75	71	71	75	74	65	78	77	52	62
Mahadwar Road [C]	45	Khari Corner (Jn)	64	68	70	70	70	72	75	67	78	76	54	48
	46	Phadke Book Centre (Jn)	65	69	70	68	71	74	70	68	81	81	55	48
	47	Gwalior Suitings (Mr)	65	67	73	73	76	73	70	69	82	82	55	49
	48	Dressland (Mr)	61	64	65	70	75	70	77	66	70	68	54	57
Gangavesh [C]	49	Raymond Suitings (Mr)	63	62	76	63	73	68	73	63	69	69	56	49
	50	Gangavesh Chowk (Jn)	66	68	70	73	75	77	81	60	78	84	59	54
	51	Shahir Sharda School (Ed)	56	66	62	67	73	72	72	68	75	73	53	56
	52	Market (Mr)	68	70	69	73	74	63	71	65	76	77	54	64
Laxmipuri [C]	53	Gangavesh Bus Stop (Jn)	69	69	70	74	75	74	74	67	76	76	62	59
	54	Pette Classes (Sb)	63	70	68	72	71	73	71	68	77	76	57	58
	55	Shiv Shakti Corner (Jn)	62	72	71	72	72	76	79	78	76	76	55	61
	56	Mahataxmi Bakery (Sb)	59	73	72	69	72	90	74	70	76	77	56	48
	57	Hotel Serna (Sb)	65	72	71	68	66	76	77	77	73	74	54	46
	58	Uma Theatre (Jn)	69	75	75	72	73	73	71	71	68	69	56	44
	59	Balappa Annappa Chougule & Company (Sb)	53	68	68	66	65	75	75	74	73	73	56	45
	60	The Ravi Co-operative Bank (Sb)	57	66	66	68	63	75	71	73	69	70	51	43
	61	Anandasharm Hotel (Mr)	59	74	73	72	69	67	71	70	85	81	58	44
	62	Maharana Pratap Bus Terminus (Jn)	67	73	73	75	71	78	78	75	77	79	56	47
	63	Zilla Koshgar Karyalay (Jn)	69	74	75	74	75	81	76	74	74	75	53	47
	64	Hotel Neelam (Mr)	67	71	71	60	71	76	73	75	74	73	53	47
Udyam Nagar [I]	65	Augustine Industries (In)	58	73	73	72	73	71	66	66	71	72	54	47
	66	Charane Engineering & Welding Works (In)	51	70	70	72	73	75	57	64	76	76	54	45
	67	Balaji Engineering (In)	53	68	68	68	67	75	64	68	76	76	55	45
	68	Ashok Iron Works (In)	63	70	70	69	65	73	73	71	75	75	55	47
	69	Shri Laxmi Spray Painting (In)	61	71	71	64	67	63	64	69	64	64	50	46
	70	Azad Chowk (Jn)	65	73	74	73	71	81	70	74	69	69	50	47
	71	Alladiya Khansahab Chowk (Jn)	68	73	74	74	73	73	71	74	61	61	49	51
	72	Hanuman Mandir (Sb)	66	71	71	71	65	65	66	66	61	59	60	50
	73	Mirajkar Ticti (Jn)	75	77	75	76	73	78	75	71	69	71	55	58
	74	Dattajirao Kashid Chowk (Jn)	68	74	74	69	69	80	68	73	75	74	54	59
	75	Kanchrieha Hotel (Sb)	68	72	72	70	72	80	68	65	72	74	52	45
	76	Suryakant Khandekar Chowk (Sb)	69	71	71	75	66	78	71	69	69	68	54	57
Shivaji Peth [K]	77	Archies Gallery (Mn)	65	69	68	69	69	74	71	72	75	75	60	39
	78	Hutatma Nivruthi Aadurkar Chowk (Jn)	65	75	75	71	69	77	70	70	78	78	54	44
	79	Daulatrao Bhosale School (Ed)	68	69	69	70	68	80	81	80	80	82	48	44

Area	Site No.	Sampling sites	7 a.m.	9 a.m.	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	9 p.m.	11 p.m.	1 a.m.	3 a.m.	5 a.m.
Rajarampuri [R]	80	New College (Ed)	60	67	67	63	64	75	77	75	73	73	47	48
	81	Buwanaster Chowk (Sb)	68	69	69	67	85	82	64	66	82	82	56	47
	82	Piasee Padmaraje Park (Mr)	62	71	71	75	75	82	81	81	80	81	47	47
	83	Rankala Tower (Jn)	72	85	73	72	74	83	81	80	80	74	56	57
	84	Janata Bazar (Jn)	71	69	72	72	71	70	77	74	71	74	54	58
	85	Caudle (Sb)	70	69	72	64	57	70	71	72	73	74	56	46
	86	Titus (Mr)	65	71	68	70	70	72	76	68	69	70	55	49
	87	Channel 9 (Mr)	64	66	67	72	69	71	68	67	73	73	54	56
	88	Way In Corner (Mr)	65	70	70	71	71	73	67	66	71	71	53	51
	89	Petrol Pump (Mr)	65	30	68	68	70	67	63	71	70	70	54	49
Vidyanagar [S]	90	Patne High School (Ed)	73	71	75	64	60	69	65	68	50	50	48	51
	91	Canara Bank (Sb)	68	74	68	61	62	74	69	71	64	68	55	61
	92	Kamala College (Ed)	60	73	70	70	71	78	74	71	62	61	55	51
	93	Takala Junction (Jn)	61	69	74	72	70	72	71	74	68	67	55	58
	94	Bharat Sahakari Hsg. Soc. Hall (Sb)	57	68	68	63	65	61	64	61	54	50	47	53
	95	Oriental High School (Ed)	70	64	69	65	63	79	77	47	47	64	51	49
	96	Hall (Sb)	70	72	72	65	62	58	65	56	49	47	48	51
	97	S.I.B.E.R. (Ed)	47	61	60	59	46	62	56	63	52	47	47	55
	98	Rajaram College (Ed)	61	53	52	60	45	61	62	51	46	44	46	47
	99	Agricultural College (Ed)	52	50	52	58	48	53	54	47	46	47	46	47
Pratibha Nagar [R]	100	University Campus 1 (Ed)	54	47	49	53	45	54	54	48	49	47	46	48
	101	University Campus 2 (Ed)	46	45	45	59	46	53	53	48	47	47	45	48
	102	University Campus 3 (Ed)	57	57	61	62	64	53	52	52	51	43	43	47
	103	Navashaya Maruti Mandir (Sb)	83	81	68	55	63	77	77	76	55	75	54	52
	104	Pratibha Nagar Hall (Jn)	56	63	59	64	58	69	61	61	65	48	47	49
	105	V.S.Khandekar School (Ed)	57	59	60	58	59	66	63	58	52	48	47	49
	106	Arwind Hosing Hospital (Hp)	64	70	64	63	61	62	74	70	74	76	55	49
	107	Market (Jn)	62	65	72	65	65	69	79	80	81	80	57	59
	108	Residency Club (Mr)	57	61	63	57	52	59	57	53	55	47	46	43
	109	Babasaheb Ambedkar Chowk (Jn)	61	64	63	73	72	72	67	67	66	66	52	52
Kavsha Bawada [R]	110	Police Adhikshak Karyalay (Jn)	63	68	70	66	66	68	52	51	52	48	47	55
	111	D.Y.Patil Engineering College (Ed)	52	72	73	64	64	63	62	70	66	46	46	47
	112	D.Y.Patil Medical College (Ed)	59	57	52	70	70	68	76	76	75	47	47	49
	113	Hotel Bawada Misal (Mr)	54	73	77	75	75	74	75	77	78	77	49	52
	114	Rasika Hotel (Mr)	59	70	72	70	78	73	76	78	75	75	59	50
	115	D.Y.Patil Balmandir (Ed)	62	76	77	76	76	75	73	73	76	76	54	48
	116	Yashwantrao Bhavrao Path (Sb)	66	63	65	68	64	68	77	76	78	76	49	49
	117	Union Bank of India (Sb)	54	70	70	77	68	65	67	68	64	63	49	48
	118	V.R.Jadhav Chowk (Jn)	57	59	55	57	55	57	70	73	72	73	49	49

Area	Site No.	Sampling sites	7 a.m.	9 a.m.	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	9 p.m.	11 p.m.	1 a.m.	3 a.m.	5 a.m.
	119	Padma Pathak chowk (Jn)	55	66	67	71	67	65	77	76	79	79	49	47
	120	Padma Pathak chowk (Sb)	51	71	69	88	72	68	88	65	63	54	50	48
Sadar Bazar [R]	121	Sairnik Colony (Sb)	72	71	72	74	76	73	76	74	74	74	52	46
	122	Sadar Bazar Circle (Jn)	63	65	64	66	67	64	57	58	53	49	47	48
	122	Lal Bahadur Shastri Garden (Sb)	65	66	68	69	68	68	66	66	70	70	49	60
	123	Mosque (Mr)	55	55	53	53	61	57	51	53	60	59	48	45
	124	Korgaonkar School (Ed)	62	74	74	73	71	71	57	59	63	67	52	52
Kadamwadi [R]	125	Vichare Mal Chowk (Sb)	63	66	65	64	63	65	83	85	81	80	55	44
	126	Shahu College (Ed)	59	65	66	61	64	64	66	54	56	48	46	45
	127	Zilla Parishad Nivas (Mr)	63	65	64	69	65	66	55	54	65	50	47	49
	128	Bhamburda Vidyapeeth (Ed)	53	75	75	76	77	76	62	64	59	58	50	48
	129	Ghatne Mutton Shop (Sb)	66	58	56	56	61	59	60	73	74	73	54	52
	130	Karmavir Bhavrao Paul School (Ed)	62	65	65	66	65	73	71	52	56	50	54	52
Ruikar Colony [R]	131	Elegant Hotel (Mr)	50	50	56	60	59	55	52	48	45	45	45	43
	132	Tower (Jn)	47	51	55	55	55	58	56	50	48	46	44	50
	133	Shreyas Bungalow (Sb)	49	53	56	54	58	57	54	49	47	45	45	48
	134	Janata Bazar (Sb)	52	56	63	59	58	55	54	55	49	49	48	52
	135	Ruikar Colony Open Space Garden (Sb)												

Note: Jn = Junction
Sb = Sublane
Mr = Main road
Ed = Educational institution
Hp = Hospital
In = Industry
C = Commercial Area
R = Residential Area
S = Silent Zone
I = Industrial Area

Maximum and minimum readings:

The maximum and the minimum readings recorded at each sampling station have been stated in the table 4.9. It is found that the maximum reading recorded during the day in the residential area was as high as 94 dB, where the permissible limit is 55 dB and in the night 92 dB where the permissible limit is only 45 dB. The maximum reading recorded in the commercial area during the day was 92 dB, where the permissible limit is 65 dB and in the night 92 dB, where the permissible limit is only 55 dB. The Silent zone showed a maximum reading of 80 dB during the day and 68 dB during the night; which is 60% and 70% higher than the standards respectively. In case of the industrial area, the maximum-recorded reading was 80 dB in the day and 80 dB during the night, which is 7% and 14% higher than the standards respectively.

Table 4.9: Maximum and minimum recorded readings during Ganesh utsav

Sampling Stations	Site No.	Day		Night	
		Min	Max	Min	Max
Lakshadweep (Sb))	1	50	74	48	54
Mandody Corner (Jn)	2	60	82	48	68
Wilder Memorial Church (Sb)	3	52	80	46	66
Mera Hotel (Sb)	4	52	78	50	66
Anugraha Hotel (Mr)	5	62	86	50	86
Central Bus Stand (Mr)	6	64	86	54	70
Konica Square (Jn)	7	58	82	52	71
Dabholkar Corner (Jn)	8	54	78	52	70
Gokul Hotel (Mr)	9	60	84	52	78
Venus Corner (Jn)	10	62	84	54	78
Trabai Garden (Mn)	11	52	80	46	74
Telephone Bhavan (Sb)	12	48	68	46	60
Kriplani Hospital (Hp)	13	52	80	46	62
Vrishali Hotel (Mn)	14	52	84	46	70
Eagle Tiles (Sb)	15	52	78	46	58
Himmat Bahadur Colony (Mn)	16	52	80	46	68
Aditya Corner (Jn)	17	54	80	46	62
S.S.Bhosale Path (Sb)	18	50	70	44	54
Kairali (Sb)	19	50	70	44	52
B.T. College (Ed)	20	48	84	46	68
Bagal Chowk (Jn)	21	60	84	46	72
Shahupuri Market (Mr)	22	60	84	46	76
Shashi Plaza (Sb)	23	56	80	44	76
Subhash Colour Lab (Mr))	24	54	82	46	66
Radhakrishna Temple (Sb)	25	56	84	44	74
Allurkar Transport (Sb)	26	58	84	44	72
Karmalkar & Company.(Sb)	27	54	84	44	74
Nidan (Sb)	28	6	74	44	68
Vyapar Peth (Sb)	29	0	84	44	78
Railway Phatak Market (Jn)	30	58	82	44	66
NCC Head Quarters (Sb)	31	50	70	44	58
Vidya Bhavan (Jn)	32	50	80	42	56
Kapse & Company (Sb)	33	50	72	42	64
Scholar Computer Academy (Jn)	34	48	74	42	56
Om Appartment (Sb)	35	48	62	42	62
Seventh Day Adventist School (Ed)	36	48	62	42	54
Friends Colony (Sb)	37	58	86	48	66
Padma Theatre (Jn)	38	62	82	50	78
Bindu Chowk (Jn)	39	60	86	60	88
Regal Electronics (Mr)	40	58	84	50	86

Table 4.9 (contd): Maximum and minimum recorded readings during Ganesh utsav

Sampling Stations	Site No.	Day		Night	
		Min	Max	Min	Max
Shivaji Chowk (Jn)	41	66	86	62	86
Una Rajwada (Jn)	42	60	84	58	84
Mahanagar Palika (Jn)	43	62	88	58	76
C.P.R. Hospital (Hp)	44	60	86	50	88
Khari Corner (Jn)	45	60	80	44	80
Phadke Book Centre (Jn)	46	62	82	44	86
Gwalior Suitings (Mr)	47	60	80	44	84
Dressland (Mr)	48	56	82	50	72
Raymond Suitings (Mr)	49	58	82	44	72
Gangavesh Chowk (Jn)	50	58	84	52	92
Shahir Shardul School (Ed)	51	50	84	48	78
Market (Mr)	52	8	84	50	78
Gangavesh Bus Stop (Jn)	53	64	80	52	80
Pethe Classes (Sb)	54	60	80	54	82
Shiv Shakti Corner (Jn)	55	54	82	52	80
Mahalaxmi Bakery (Sb)	56	52	92	46	78
Hotel Sema (Sb)	57	52	80	44	76
Uma Theatre (Jn)	58	60	82	42	74
Balappa Annappa Chougule & Company (Sb)	59	48	84	42	76
The Ravi Co-operative Bank (Sb)	60	54	86	42	72
Anandasharm Hotel (Mr)	61	56	86	42	88
Maharana Pratap Bus Terminus (Jn)	62	64	86	46	88
Zilla Koshgar Karyalay (Jn)	63	60	84	46	76
Hotel Neelam (Mr)	64	60	80	46	76
Augustine Industries (In)	65	54	80	46	74
Charane Engineering & Welding Works (In)	66	48	78	44	80
Balaji Engineering (In)	67	52	82	42	78
Shok Iron Works (In)	68	56	80	46	80
Shri Laxmi Spray Painting. (In)	69	52	78	42	68
Azad Chowk (Jn)	70	58	88	45	72
Alladiya Khansaheb Chowk (Jn)	71	64	80	46	66
Hanuman Mandir (Sb)	72	58	80	44	68
Virajkar Ticti (Jn)	73	64	84	48	76
Dattajirao Kashid Chowk (Jn)	74	60	84	48	76
Kanchrisha Hotel (Sb)	75	56	84	44	76
Buryakant Khandekar Chowk (Sb)	76	62	82	52	72
Archies Gallery (Mn)	77	60	78	38	78
Hutatma Nivruthi Aadurkar Chowk (Jn)	78	62	84	42	82
Daulatrao Bhosale School (Ed)	79	62	84	42	84
New College (Ed)	80	56	80	44	76

Table 4.9 (contd): Maximum and minimum recorded readings during Ganesh utsav

Sampling Stations	Site No.	Day		Night	
		Min	Max	Min	Max
Buvamaster Chowk (Sb)	81	58	86	44	86
Pisses Padmaraje Park (Mr)	82	56	88	44	86
Rankala Tower (Jn)	83	64	88	48	82
Janata Bazar (Jn)	84	62	84	50	76
Castle (Sb)	85	56	84	44	92
Titus (Mr)	86	56	94	46	72
Channel 9 (Mr)	87	58	82	50	76
Way In Corner (Mr)	88	58	80	48	76
Petrol Pump (Mr)	89	56	82	44	72
Patne High School (Ed)	90	54	86	46	56
Canara Bank (Sb)	91	50	80	50	70
Kamala College (Ed))	92	56	92	48	66
Takala Junction (Jn)	93	56	82	50	74
Bharat Sahakari Hsg. Soc. Hall. (Sb)	94	54	78	46	62
Oriental High School(Ed)	95	46	84	46	74
Hall (Sb)	96	48	80	46	56
S.I.B.E.R. (Ed)	97	44	70	42	68
Rajaram College (Ed)	98	42	80	42	50
Agricultural College (Ed)	99	42	66	44	50
University Campus 1 (Ed)	100	42	64	42	52
University Campus 2 (Ed)	101	42	66	42	50
University Campus 3 (Ed)	102	50	70	42	52
Navashaya Maruti Mandir (Sb)	103	50	86	48	78
Pratibha Nagar Hall (Jn)	104	50	80	44	72
V.S.Khandekar School (Ed)	105	48	72	44	56
Arwind Hosingh Hospital (Hp)	106	54	86	48	78
Market (Jn)	107	56	82	54	88
Residency Club (Mr)	108	48	72	40	66
Babasaheb Ambedkar Chowk (Jn)	109	56	76	42	68
Police Adhikshak Karyalay (Jn)	110	50	74	44	68
D.Y.Patil Engineering College (Ed)	111	46	78	42	74
D.Y.Patil Medical College (Ed)	112	48	78	44	78
Hotel Bawada Misal (Mr)	113	50	86	46	84
Rasika Hotel (Mr)	114	54	88	48	78
D.Y.Patil Balmandir (Ed)	115	54	84	46	78
Yashvantrao Bhavrao Path (Sb)	116	54	78	44	80
Union Bank of India (Sb)	117	50	86	46	68
V.R.Jadhav Chowk (Jn)	118	50	74	46	74
Padma Pathak chowk (Jn)	119	48	78	46	84
Sainik Colony (Sb)	120	46	78	46	68
Sadar Bazar Circle (Jn)	121	64	82	42	78

Table 4.9 (contd): Maximum and minimum recorded readings during Ganesh utsav

Sampling Stations	Site No.	Day		Night	
		Min	Max	Min	Max
Lal Bahadur Shastri Garden (Sb)	122	54	74	44	60
Mosque (Mr)	123	60	72	46	74
Korgaonkar School (Ed)	124	48	74	44	64
Vichare Mal Chowk (Sb)	125	52	78	50	76
Shahu College (Ed)	126	60	86	40	86
Zilla Parishad Nivas (Mr)	127	52	76	42	66
Bharatiya Vidyapeeth (Ed)	128	50	72	44	76
Ghatne Mutton Shop (Sb)	129	50	80	42	64
Karmavir Bhavrao Patil School (Ed)	130	50	78	48	78
Elegant Hotel (Mr)	131	48	82	46	68
Tower (Jn)	132	44	72	42	50
Shreyas Bungalow (Sb)	133	42	72	42	54
Janata Bazar (Sb)	134	46	64	42	50
Ruikar Colony Open Space Garden (Sb)	135	44	70	44	54

Note: Jn = Junction

Sb = Sublane

Mr = Main road

Ed = Educational institution

Hp = Hospital

In = Industry

Noise levels at each time interval:

The noise levels for each time slot has been calculated for each area and is stated in the table 4.10. It is found that the ambient noise levels during the day ranges between 54 dB to 81 dB in the residential areas, where the standard limit is 55 dB and during the night it ranges from 45 dB to 79 dB, where the standard limit is 45 dB. The ambient noise levels during the day in the commercial areas ranged between 65 dB to 82 dB, the standard limit being 65 dB and during the night the levels ranged between 47dB to 82 dB, the standard being 55 dB. In case of the silent zone, the ambient noise levels during the day range from 60 dB to 69 dB, the standard being 50 dB and during the night the levels ranged from 49 dB to 59 dB where the standard level is 40 dB.

The trends of noise levels existing throughout the day in each of the areas, have been compared with the noise standards, and are shown in the fig 4.5(a) to fig 4.5(i). It is evident from the fig 4.5(a to i), that it in most of the commercial areas, the noise levels are above 70 dB throughout the day showing an 8% increase in sound level from the standard. During the night hours, up to 1:00 a.m. the noise levels continue to be above 70 dB in most of the commercial areas, which is an increase of 27% above the standard levels. In case of the residential areas, the noise levels are found to be above 65 dB during the day hours in most of the cases showing an increase of 18% above standard level

and above 70 dB up to 1:00 a.m. in the night at most places, which is an increase of 56% above the prescribed standard. The silent zone shows the noise levels of above 60 dB during the day hours, which is an increase of 20% above the standards and during the night hours, the noise levels being around 50 dB at different time intervals throughout the night, showing a 25% increase above noise standard. In the industrial area of Kolhapur city, i.e. Udyamnagar, the noise levels at different time intervals through the day are slightly above 70 dB, but it is within the standards. However the noise levels during the night, up to 1:00 a.m. show an increase of 7% above the standard, and the others are being within limits.

Table 4.10: AMBIENT NOISE LEVELS IN DIFFERENT AREAS DURING GANESH UTSAV

Areas	7 A.M.	9 A.M.	11 A.M.	1 P.M.	3 P.M.	5 P.M.	7 P.M.	9 P.M.	11 P.M.	1 A.M.	3 A.M.	5 A.M.
New Shahupuri	70	73	71	74	75	75	75	74	71	66	63	65
Trabai Park	67	66	70	68	65	67	65	65	62	53	49	54
Shahupuri	65	73	74	75	72	72	75	70	69	68	61	47
Shivaji Park	64	65	63	68	60	60	67	58	54	51	52	45
Shivaji road	67	72	76	72	74	76	78	79	81	82	60	68
Bhaunsinji Road	68	73	75	75	76	77	81	77	79	80	70	77
Mahadwar Road	66	68	74	72	76	74	76	72	79	79	57	56
Gangavesh	68	71	70	75	77	76	78	69	81	81	69	65
Laxmipuri	71	75	75	74	73	82	78	76	79	79	66	66
Udyam Nagar	63	73	72	71	73	74	70	72	75	76	55	47
Mangalwar Peth	74	76	76	76	73	80	73	73	72	72	56	60
Shivaji Peth	71	79	73	75	76	81	79	79	81	81	58	53
Rajarampuri	74	77	77	74	73	78	79	73	76	72	56	59
Vidyanagar	65	60	61	65	60	69	62	63	53	49	50	59
Pratibha Nagar	77	77	70	69	65	73	76	76	77	79	59	56
Kasaba Bawada	69	75	77	78	79	76	77	78	78	76	56	57
Line Bazar	55	67	65	67	68	65	72	71	74	74	48	47
Sadar Bazar	67	70	70	70	71	69	71	68	69	70	50	54
Kadamwadi	65	70	70	72	72	71	78	79	77	77	53	54
Ruikar Colony	59	62	64	65	65	72	68	54	54	49	56	50

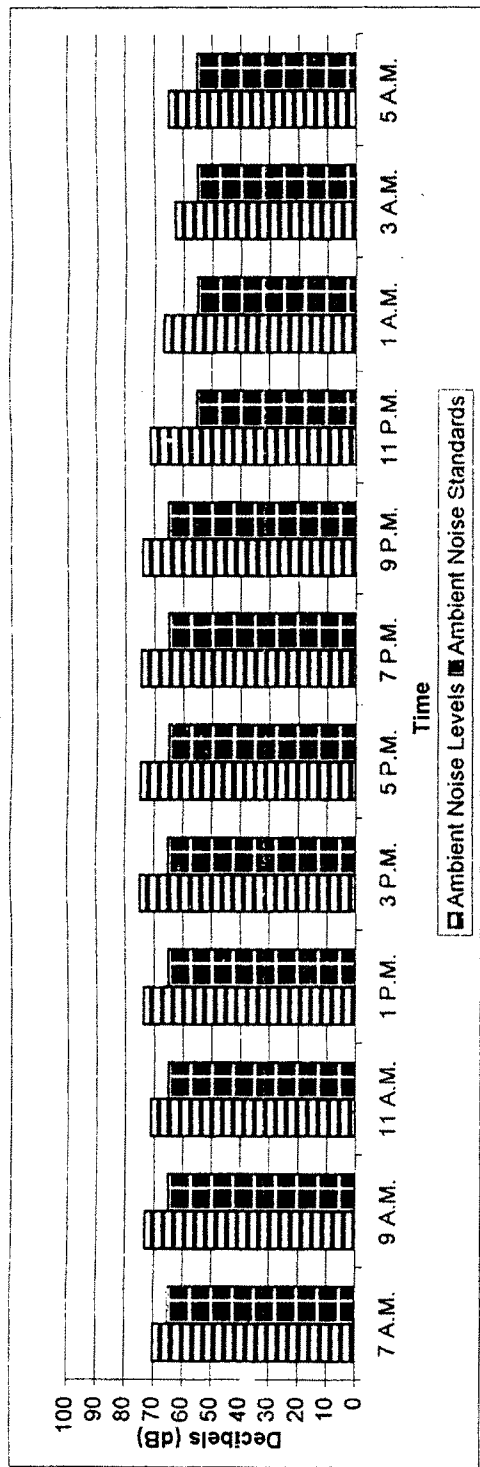


Fig 4.5(a): Comparison chart of ambient noise levels & ambient noise standards in New Shahupuri area during Ganesh utsav.

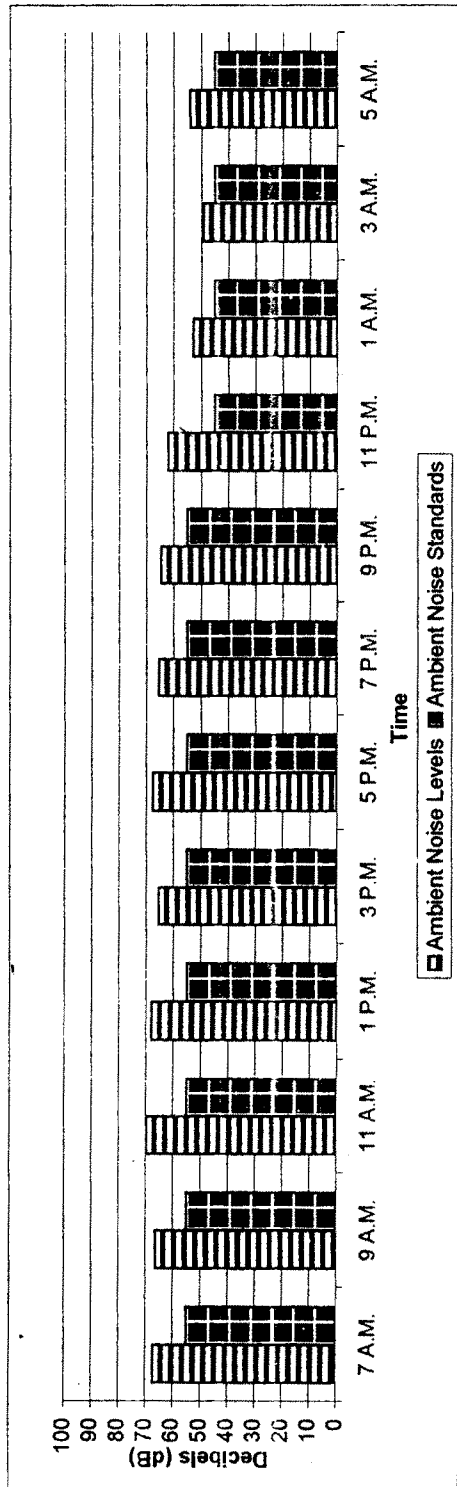


Fig 4.5(b): Comparison chart of ambient noise levels & ambient noise standards in Tarabai Park area during Ganesh utsav.

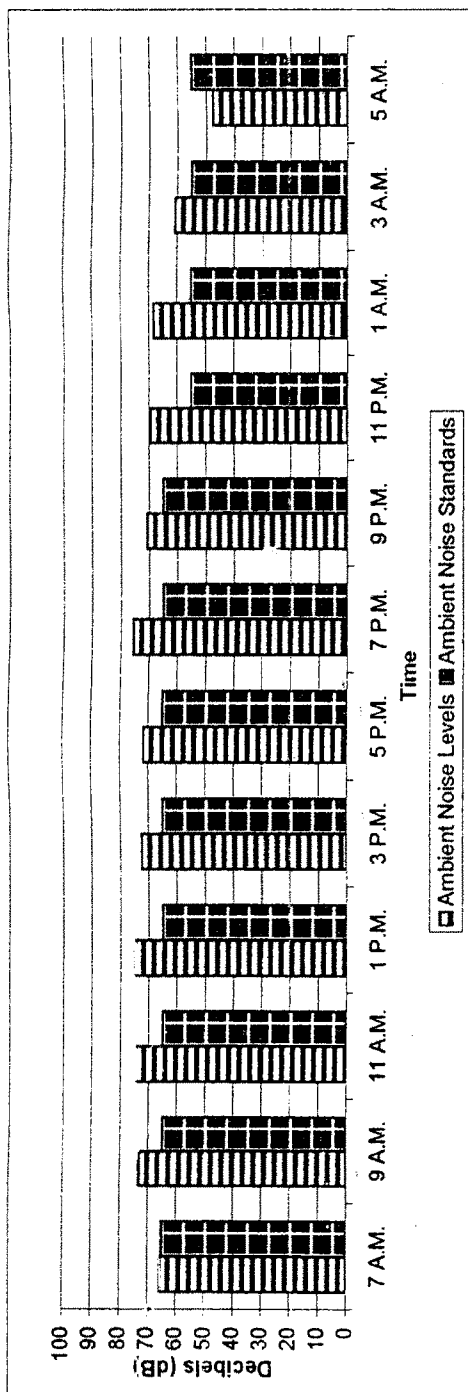


Fig 4.5(c): Comparison chart of ambient noise levels & ambient noise standards in Shahupuri area during Ganesh utsav.

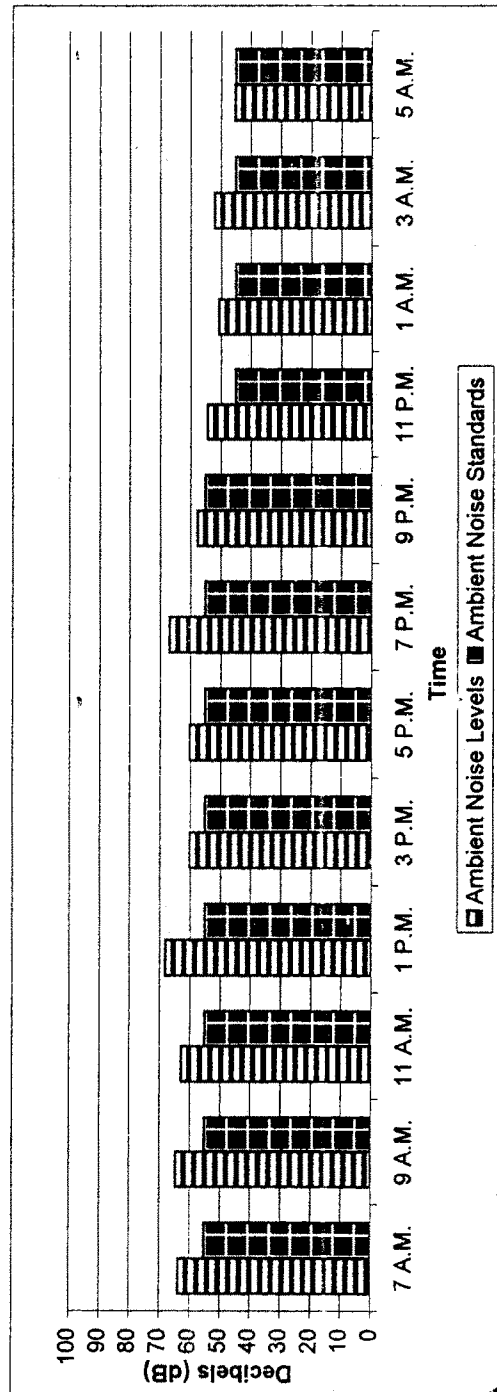


Fig 4.5(d): Comparison chart of ambient noise levels & ambient noise standards in Shivaji Park area during Ganesh utsav.



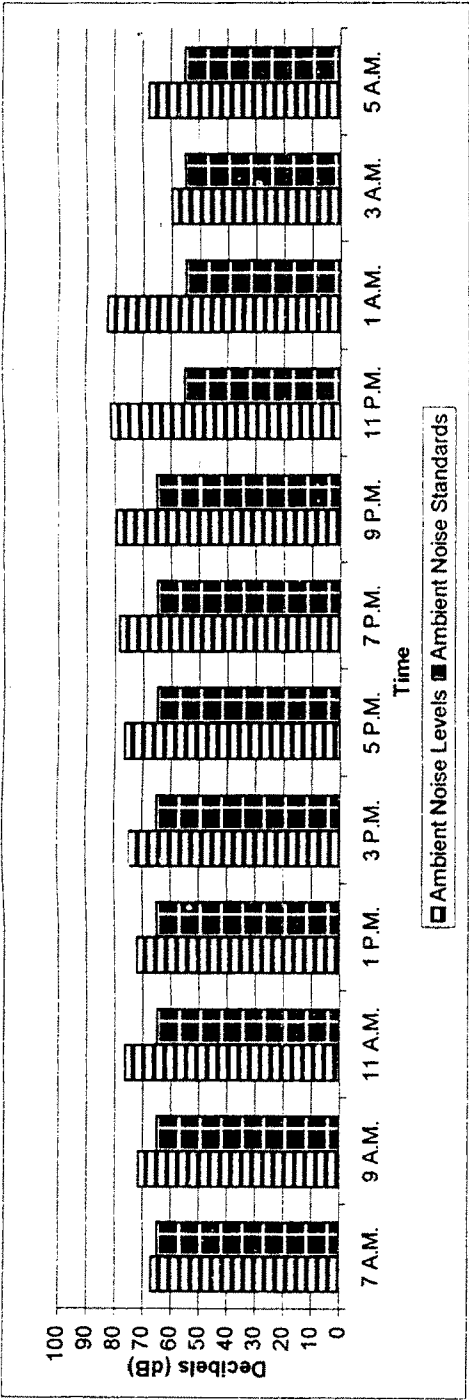


Fig 4.5(e): Comparison chart of ambient noise levels & ambient noise standards in Shivaji Road area during Ganesh utsav.

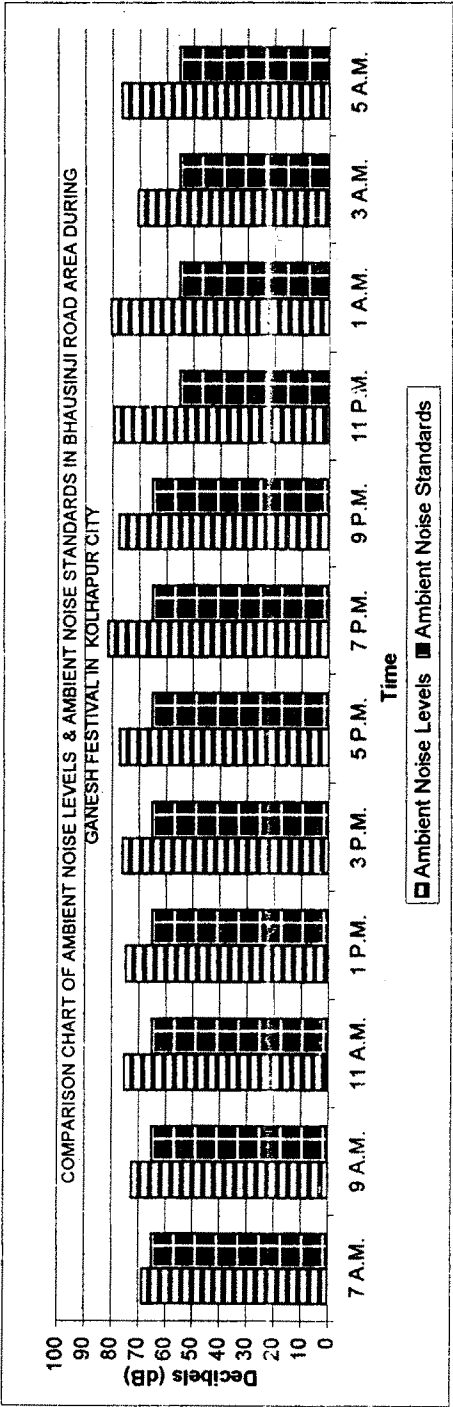


Fig 4.5(f): Comparison chart of ambient noise levels & ambient noise standards in Bhausaingi Road area during Ganesh utsav.

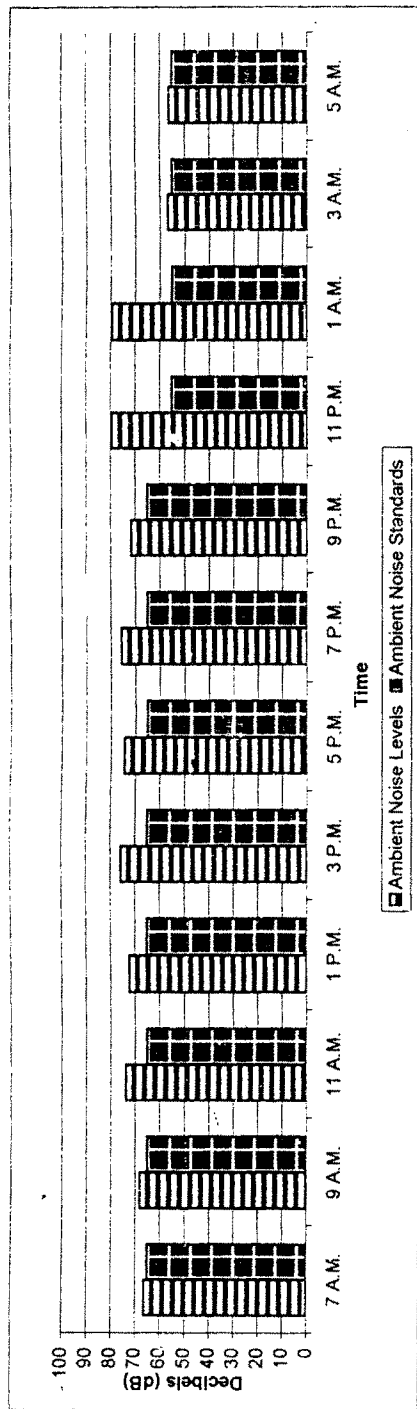


Fig 4.5(g): Comparison chart of ambient noise levels & ambient noise standards in Mahadwar Road area during Ganesh utsav.

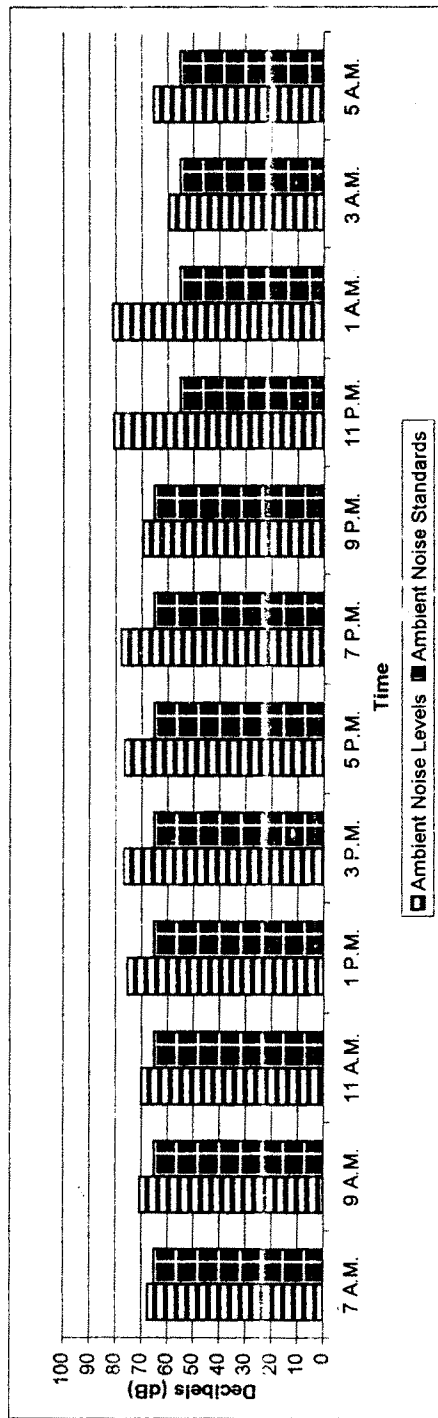


Fig 4.5(h): Comparison chart of ambient noise levels & ambient noise standards in Gangavesh area during Ganesh utsav.

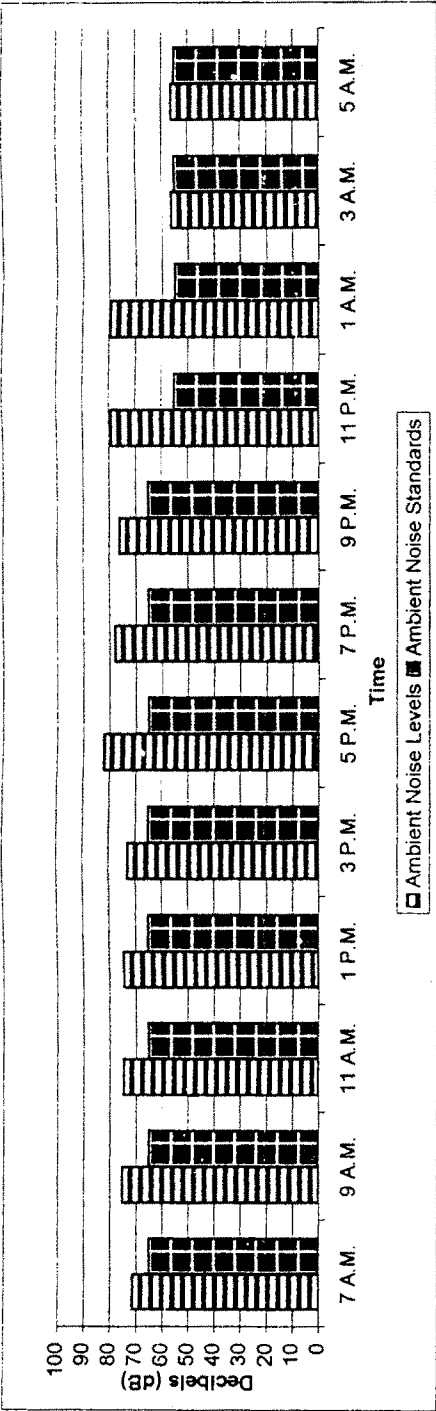


Fig 4.5(i): Comparison chart of ambient noise levels & ambient noise standards in Laxmipuri area during Ganesh utsav.

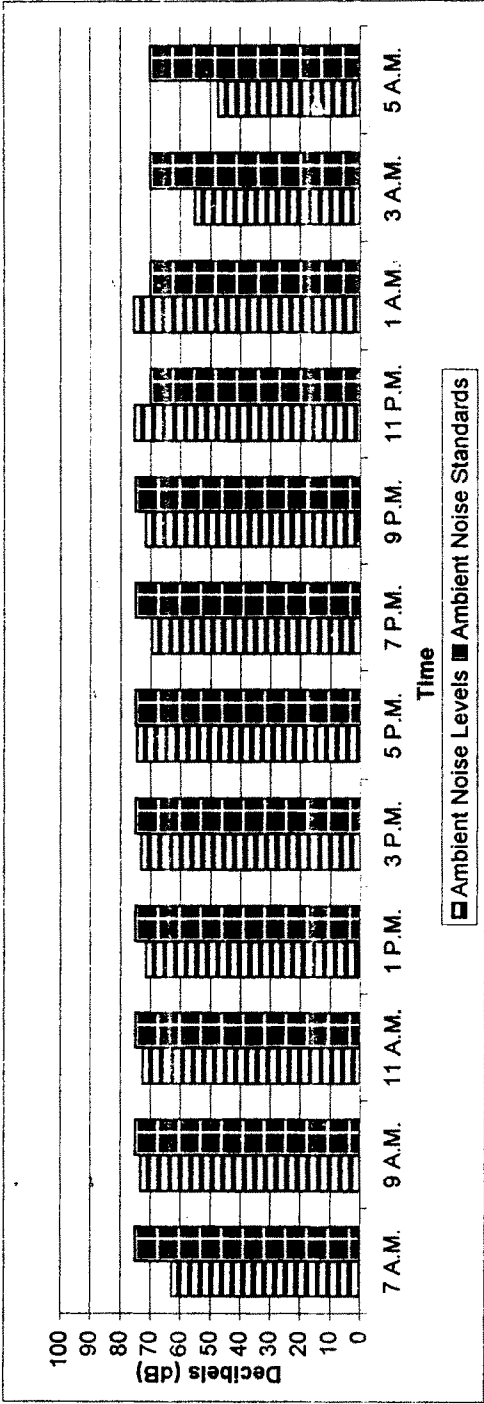


Fig 4.5(j): Comparison chart of ambient noise levels & ambient noise standards in Udyam Nagar area during Ganesh utsav.

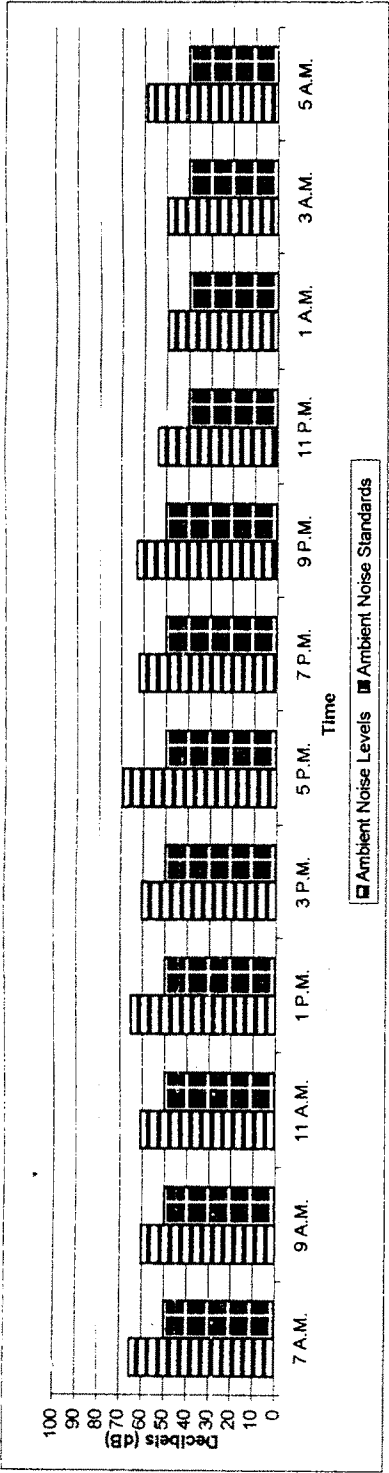


Fig 4.5(k): Comparison chart of ambient noise levels & ambient noise standards in Vidya Nagar area during Ganesh utsav.

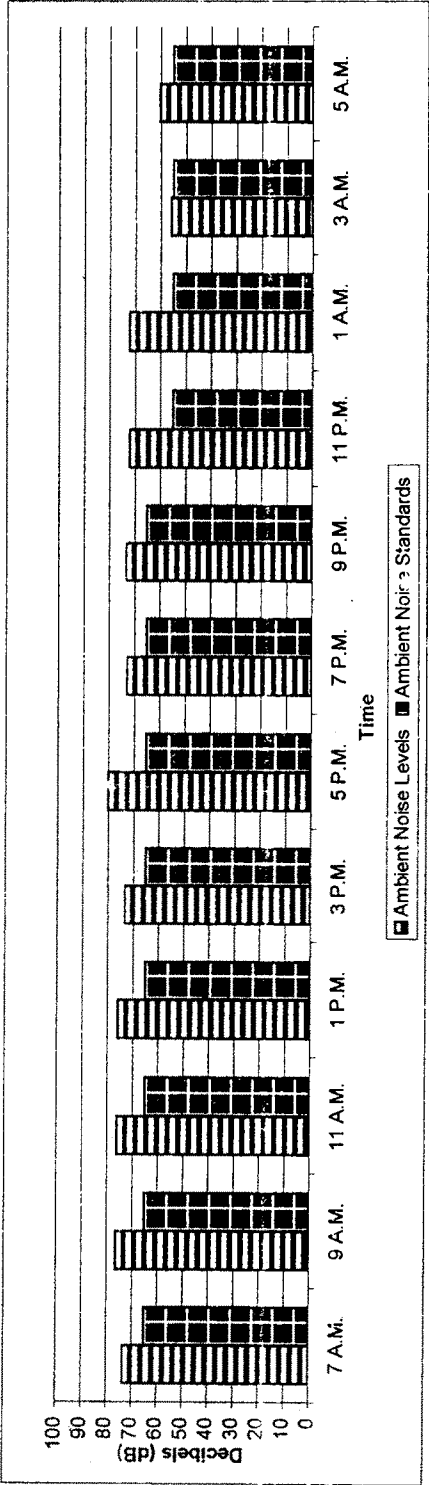


Fig 4.5(l): Comparison chart of ambient noise levels & ambient noise standards in Mangalwar Peth area during Ganesh utsav.

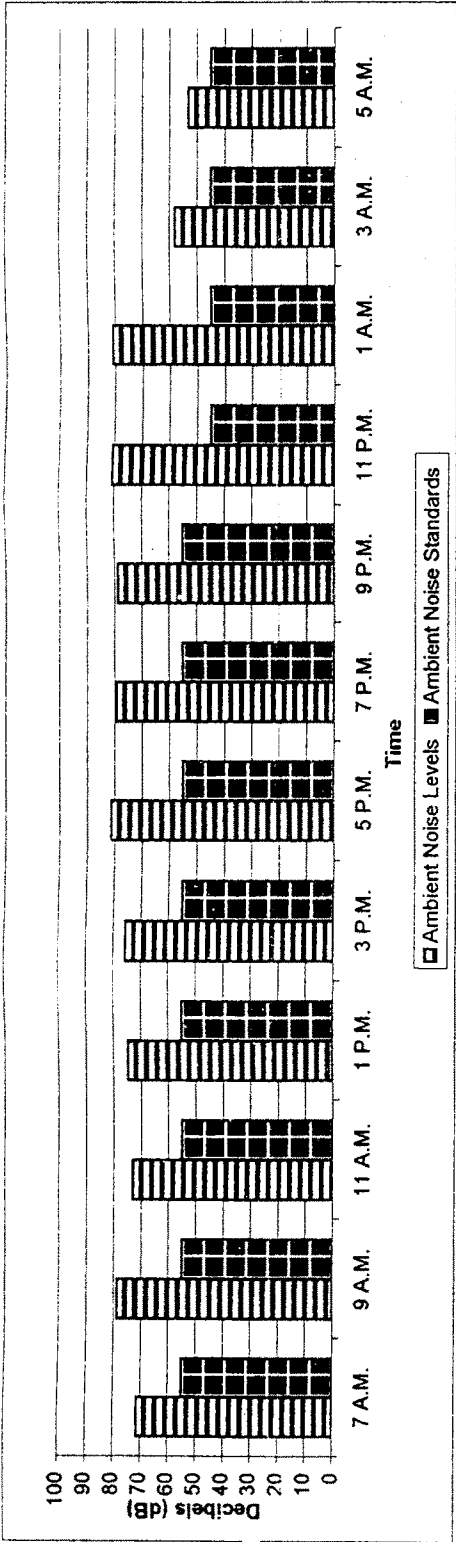


Fig 4.5(m): Comparison chart of ambient noise levels & ambient noise standards in Shivaji Peth area during Ganesh utsav.

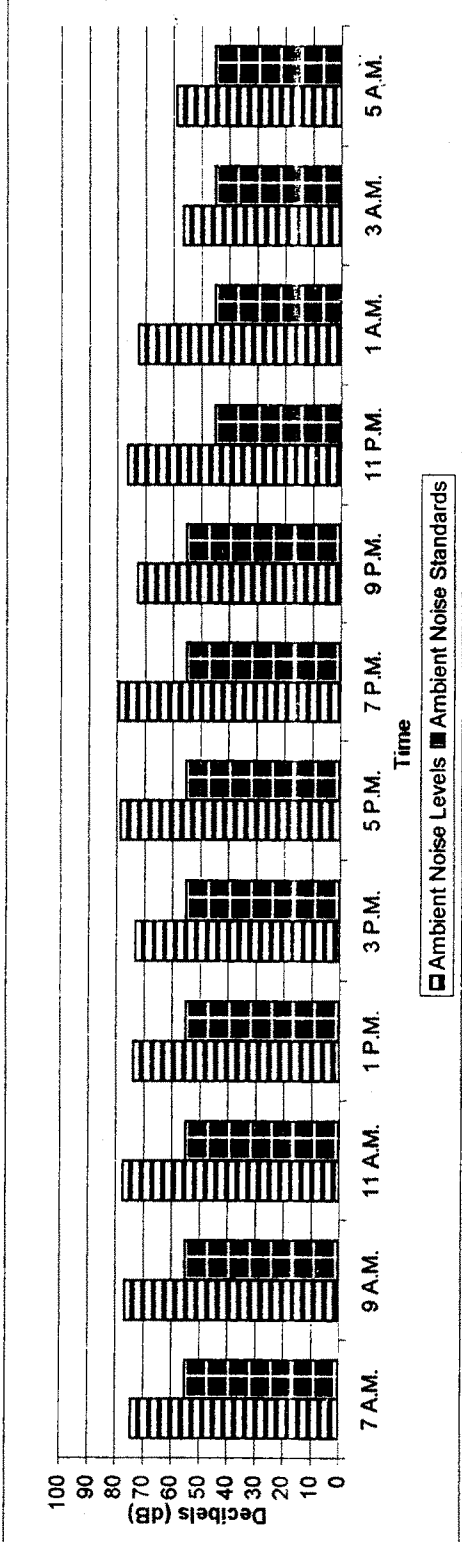


Fig 4.5(n): Comparison chart of ambient noise levels & ambient noise standards in Rajarampuri area during Ganesh utsav.

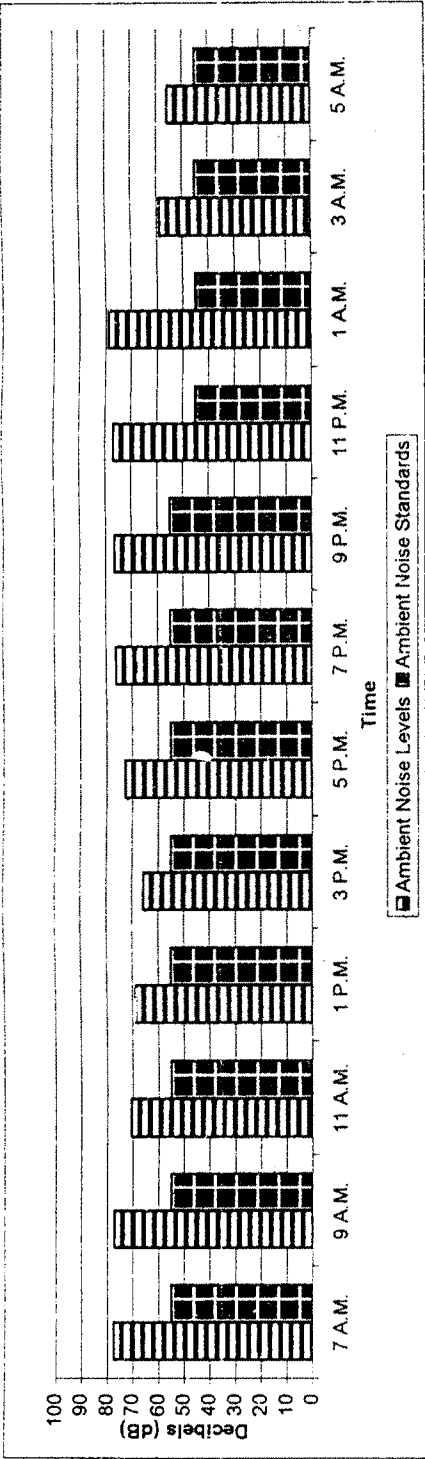


Fig 4.5(o): Comparison chart of ambient noise levels & ambient noise standards in Pratibha Nagar area during Ganesh utsav.

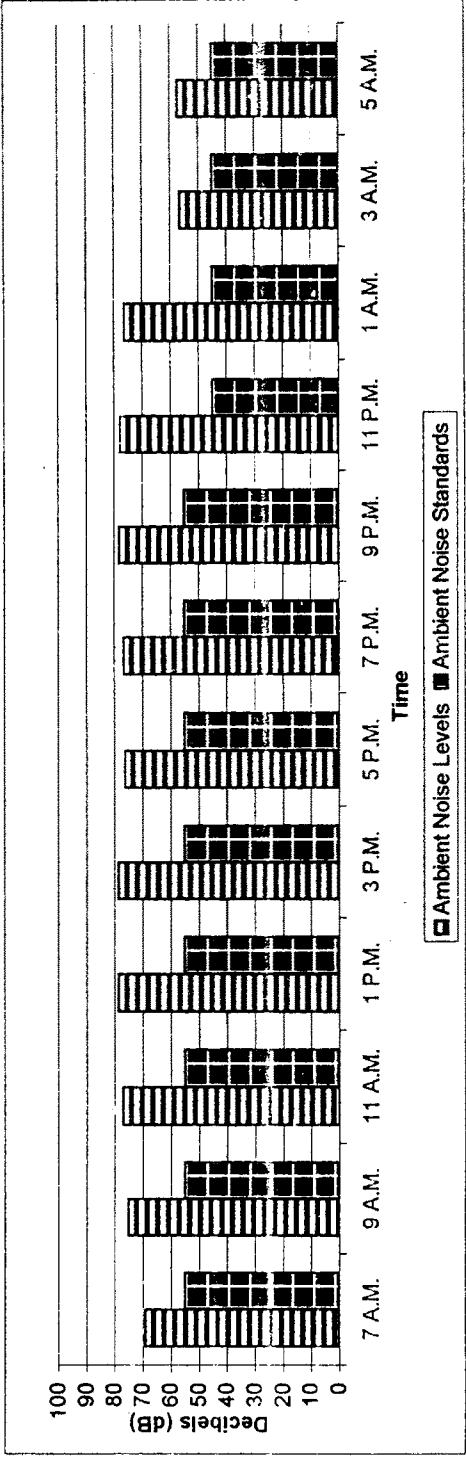


Fig 4.5(p): Comparison chart of ambient noise levels & ambient noise standards in Kasaba Bawada area during Ganesh utsav.

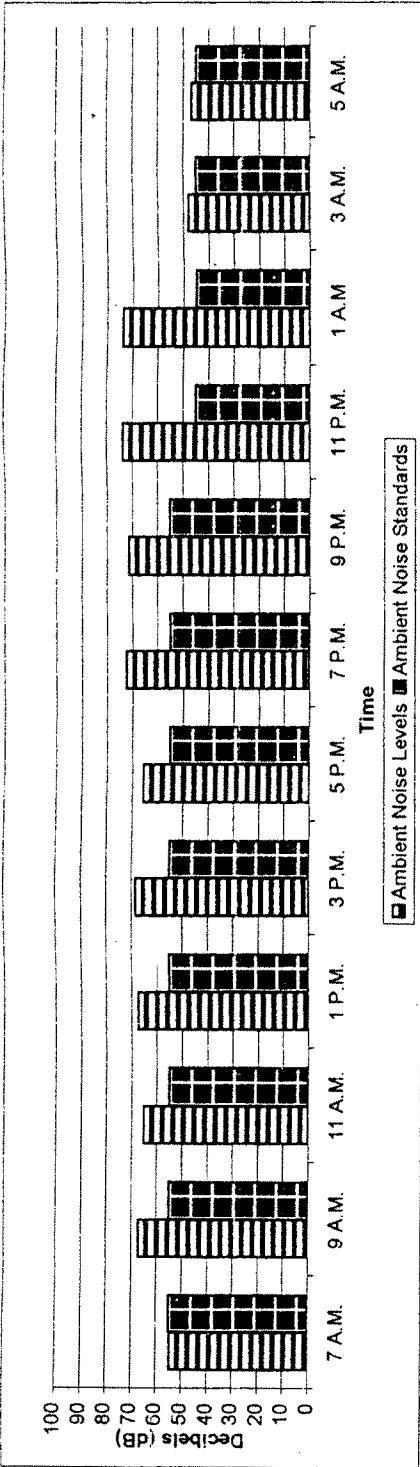


Fig 4.5(q): Comparison chart of ambient noise levels & ambient noise standards in Line Bazar area during Ganesh utsav.

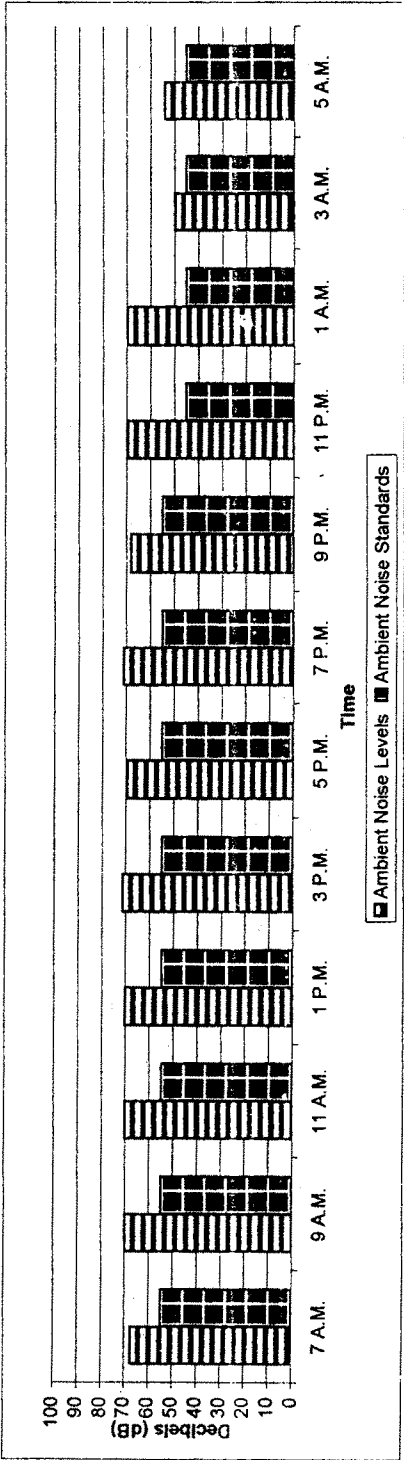


Fig 4.5(r): Comparison chart of ambient noise levels & ambient noise standards in Sadar Bazar area during Ganesh utsav.

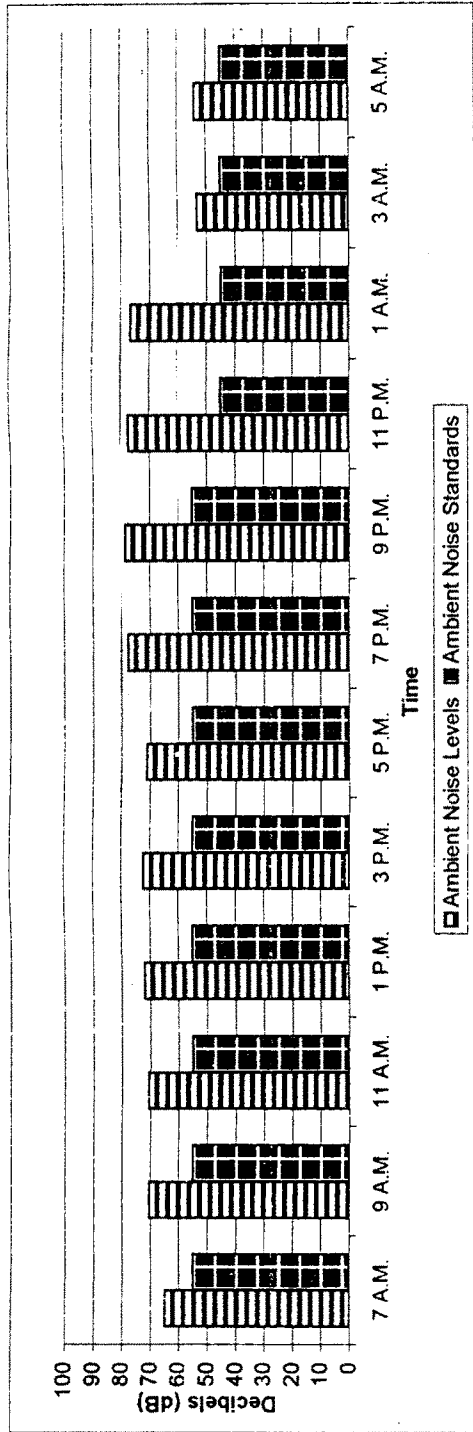


Fig 4.5(s): Comparison chart of ambient noise levels & ambient noise standards in Kadam Wadi area during Ganesh utsav.

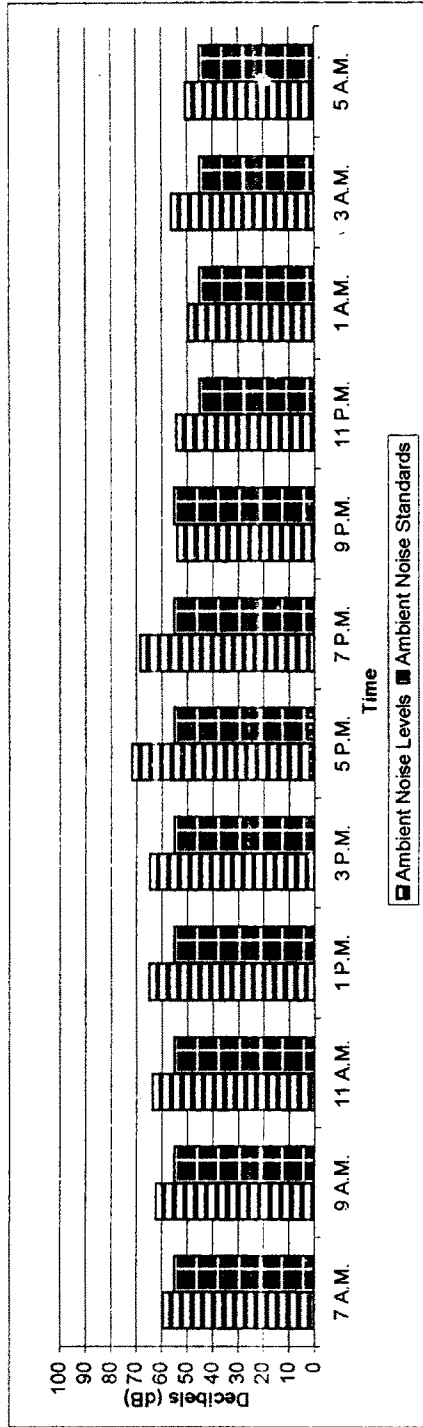


Fig 4.5(t): Comparison chart of ambient noise levels & ambient noise standards in Ruikar Colony area during Ganesh utsav.

Noise levels for the Days and Nights:

The ambient equivalent energy noise levels for the days and nights have been estimated and it is stated in table 4.11. The commercial areas show noise levels during the day hours in the range of 73 dB to 77 dB in different localities and the night hour levels ranged from 67 dB to 79 dB, thus showing an increase of 12% to 18% and 21% to 45% respectively. Similarly the residential areas studied, showed noise levels during the day in the range of 66 dB to 78 dB, showing an increase of 20% to 42%, while in the night hours it ranged between 54 dB to 78 dB, showing an increase of 20% to 73% from the prescribed standards. In case of the industrial area, the noise level for the day was found to be 72 dB, which is well within the standard limit and during the night also it continued to be 72 dB, which is an increase of 3% from the standard limit. The silent zone showed noise level of 61 dB during the day, which is an increase of 22% and 51dB during the night, indicating an increase of 28%, from the standard limits.

The status of noise in each area has been compared with the noise standards and is shown in fig 4.6 (a to i). As each area is unique in its own way, these comparative graphs will help comprehend the noise status in each of the studied areas.

**Table 4.11 Ambient Noise Levels for Day & Night
during Ganesh utsav**

AREAS	DAY	NIGHT
New Shahupuri[c]	73	67
Trabai Park[r]	67	57
Shahupuri[c]	73	66
Shivaji Park[r]	67	54
Shivaji road[c]	76	79
Bhausinji Road[c]	77	78
Mahadwar Road[c]	73	76
Gangavesh[c]	74	78
Laxmipuri[c]	77	76
Udyam Nagar[i]	72	72
Mangalwar Peth[c]	76	69
Shivaji Peth[r]	78	78
Rajarampuri[r]	75	71
Vidyanagar[s]	61	51
Pratibha Nagar[r]	75	75
Kasaba Bawada[r]	74	71
Line Bazar[r]	71	73
Sadar Bazar[r]	71	68
Kadamwadi[r]	74	74
Ruikar Colony[r]	66	53

Where c = Commercial Area
r = Residential Area
I = Industrial Area
s = Silent Area

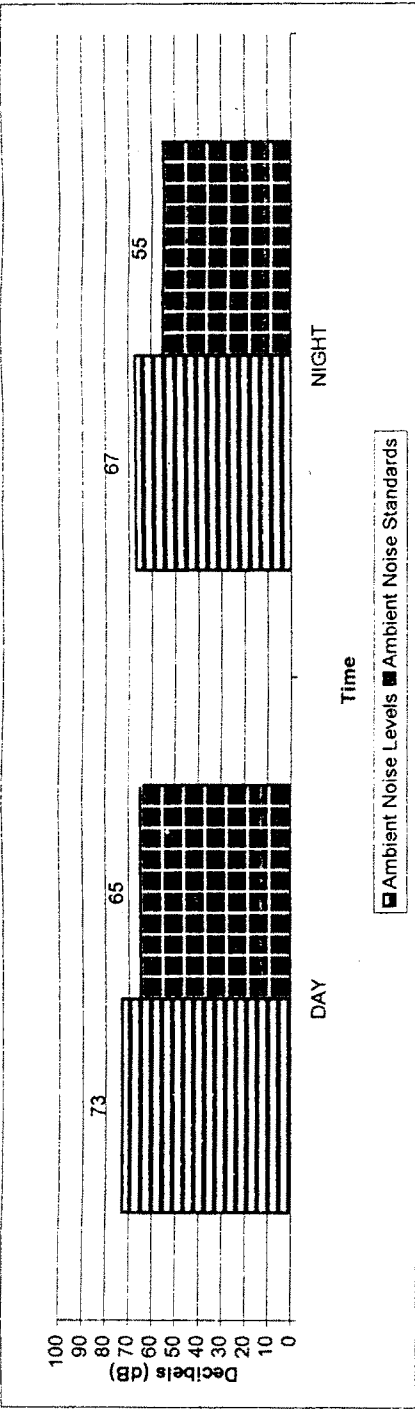


Fig 4.6(a): Comparison chart of ambient noise levels & ambient noise standards in New Shahupuri area during Ganesh utsav.

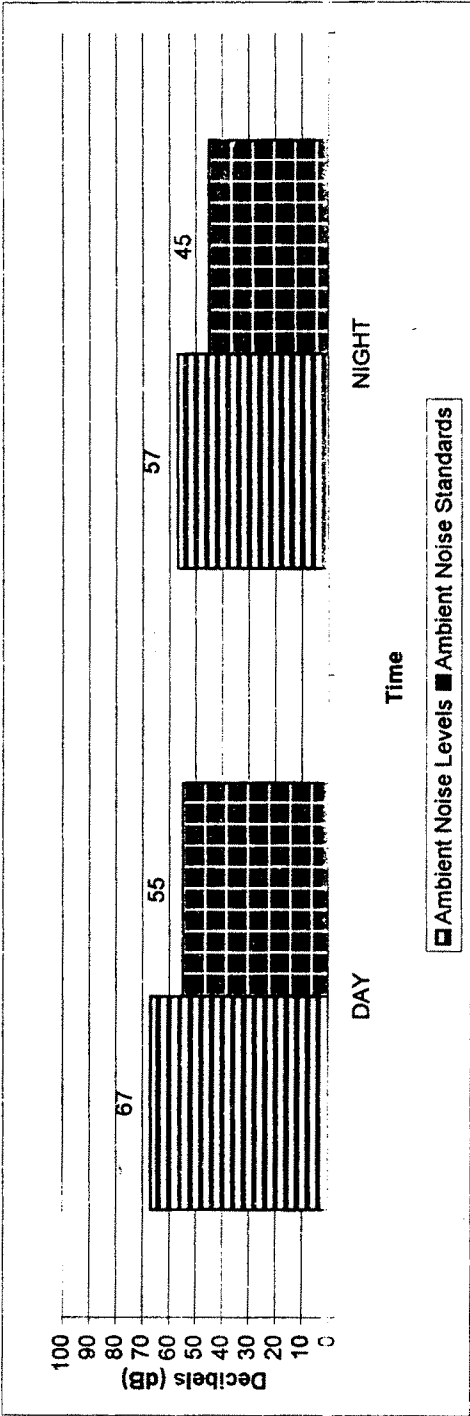


Fig 4.6(b): Comparison chart of ambient noise levels & ambient noise standards in Tarabai Park area during Ganesh utsav.

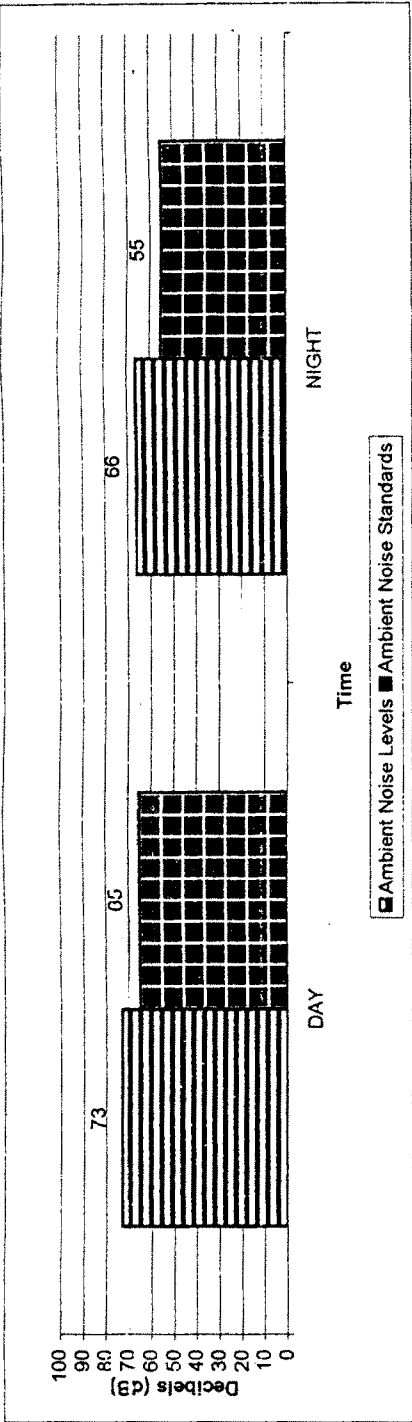


Fig 4.6(c): Comparison chart of ambient noise levels & ambient noise standards in Shahupuri area during Ganesh utsav.

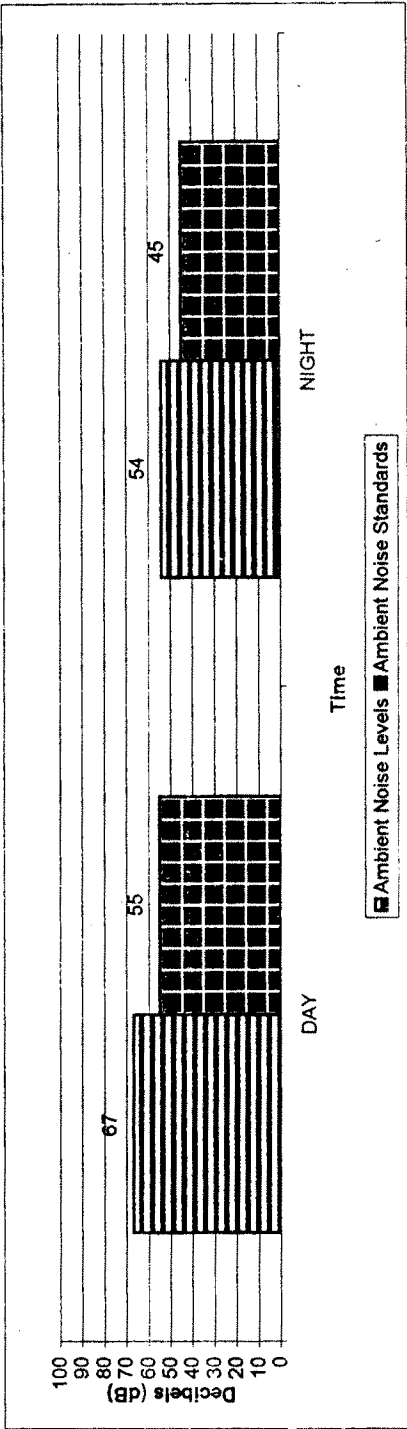


Fig 4.6(d): Comparison chart of ambient noise levels & ambient noise standards in Shivaji Park area during Ganesh utsav.

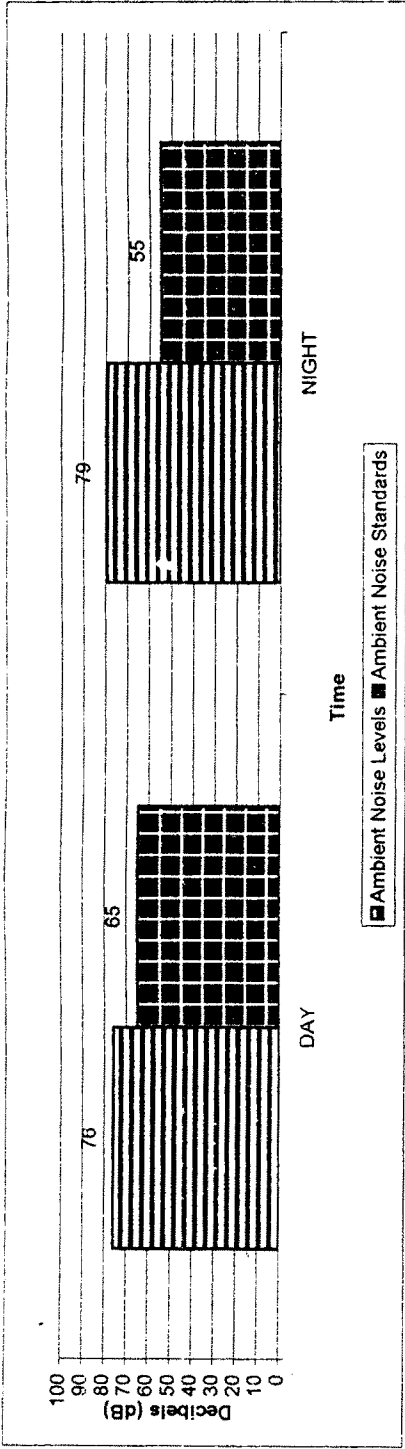


Fig 4.6(e): Comparison chart of ambient noise levels & ambient noise standards in Shivaji Road area during Ganesh utsav.

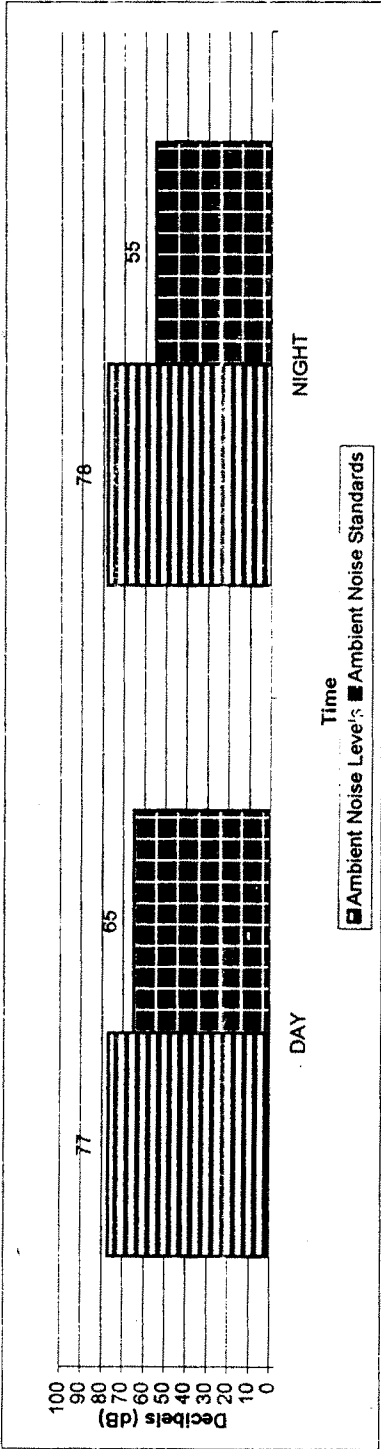


Fig 4.6(f): Comparison chart of ambient noise levels & ambient noise standards in Bhausinji Road area during Ganesh utsav.

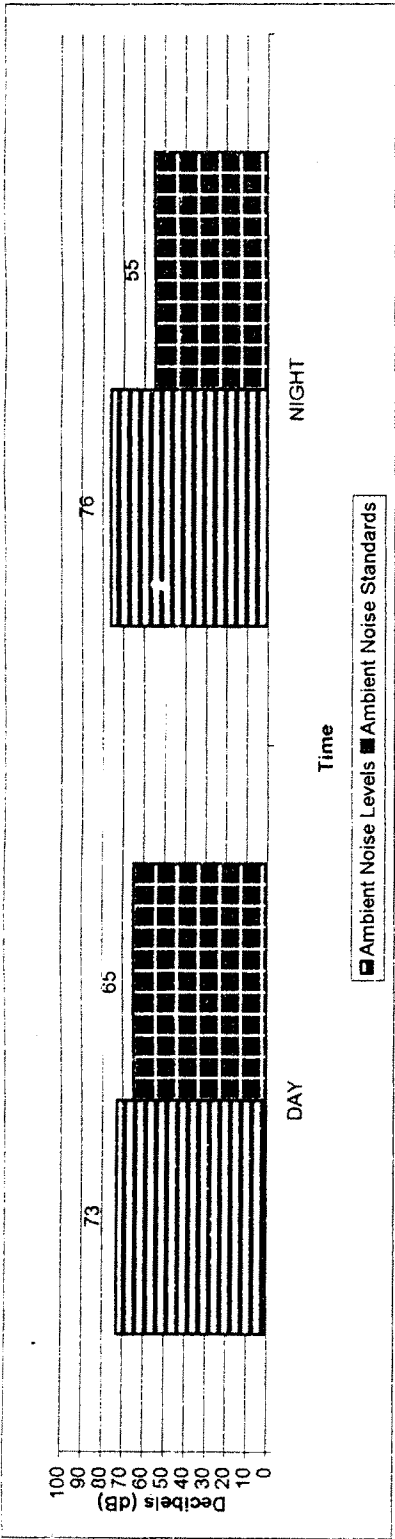


Fig 4.6(g): Comparison chart of ambient noise levels and ambient noise standards in Mahadwar Road area during Ganesh utsav.

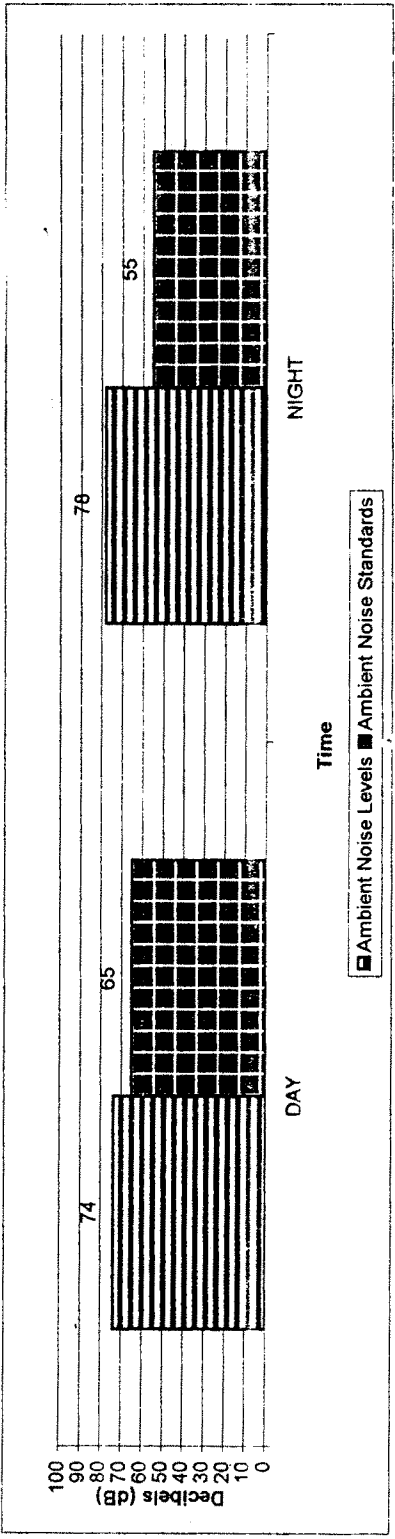


Fig 4.6(h): Comparison chart of ambient noise levels and ambient noise standards in Gangavesh area during Ganesh utsav.



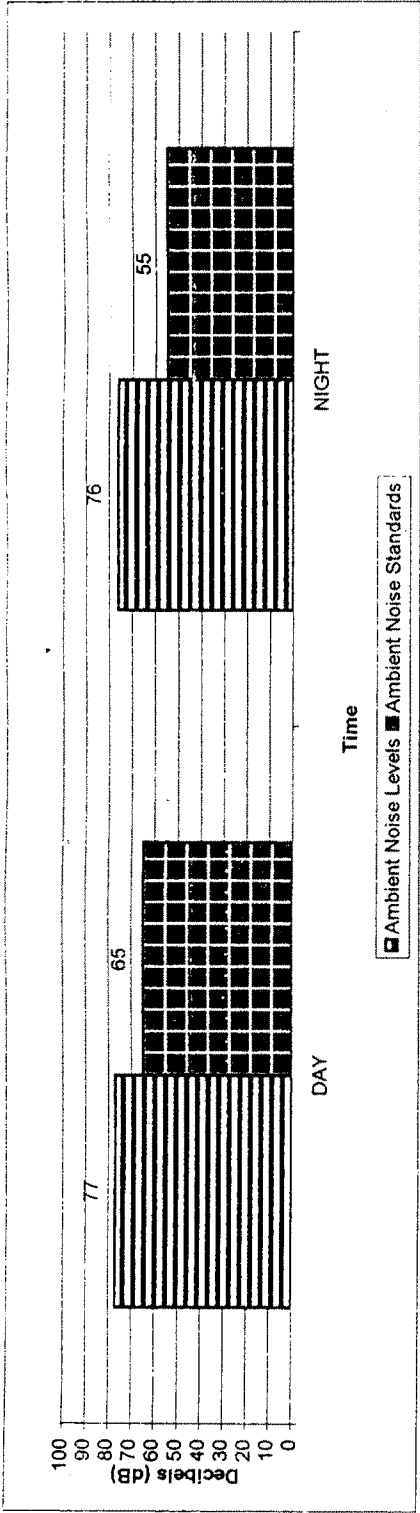


Fig 4.6(i): Comparison chart of ambient noise levels & ambient noise standards in Laxmipuri area during Ganesh utsav.

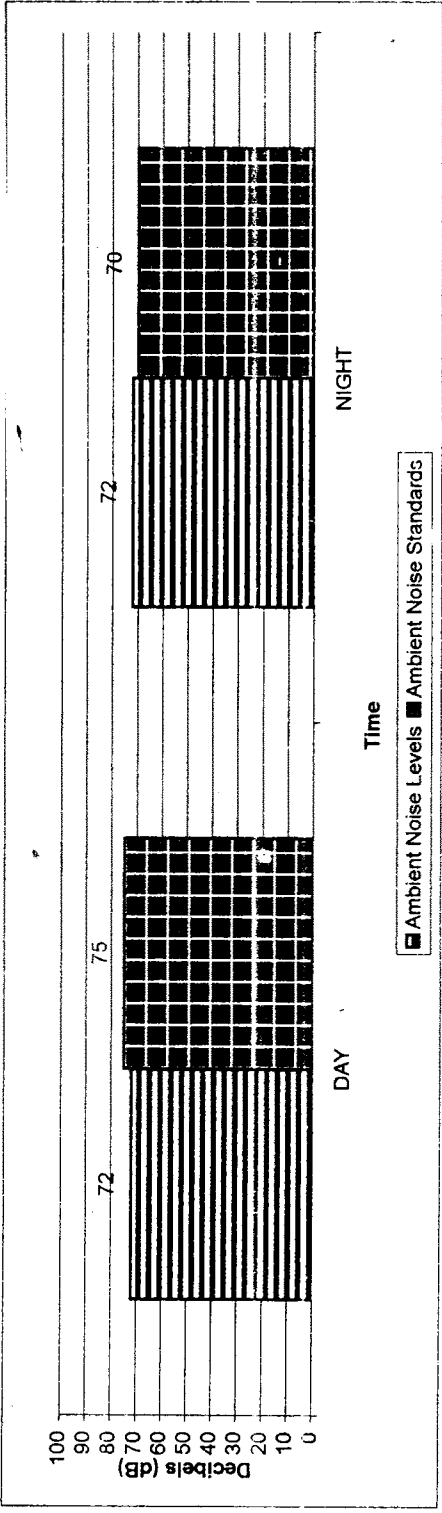


Fig 4.6(j): Comparison chart of ambient noise levels & ambient noise standards in Udyam Nagar area during Ganesh utsav.

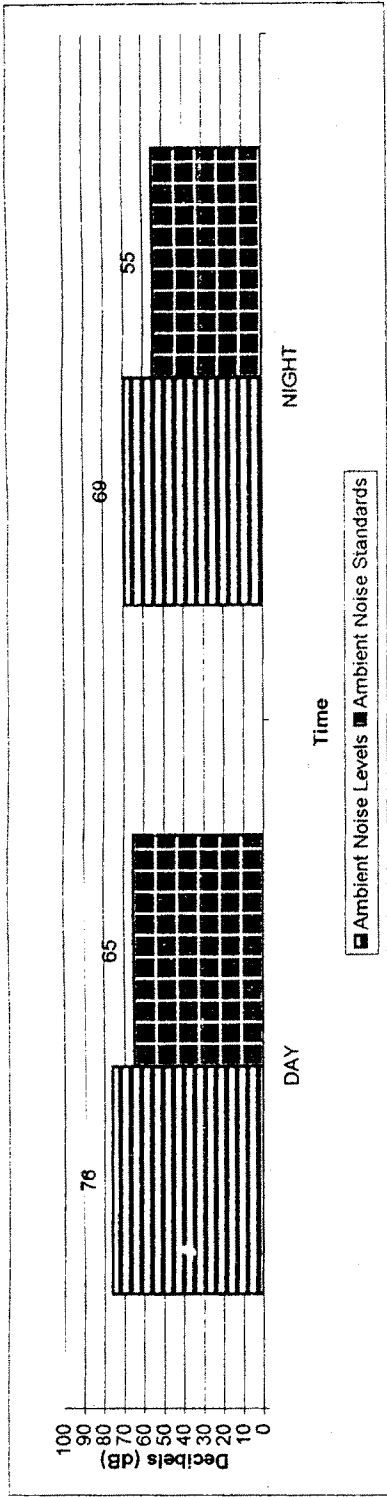


Fig 4.6(k): Comparison chart of ambient noise levels & ambient noise standards in Mangalwar Path area during Ganesh utsav.

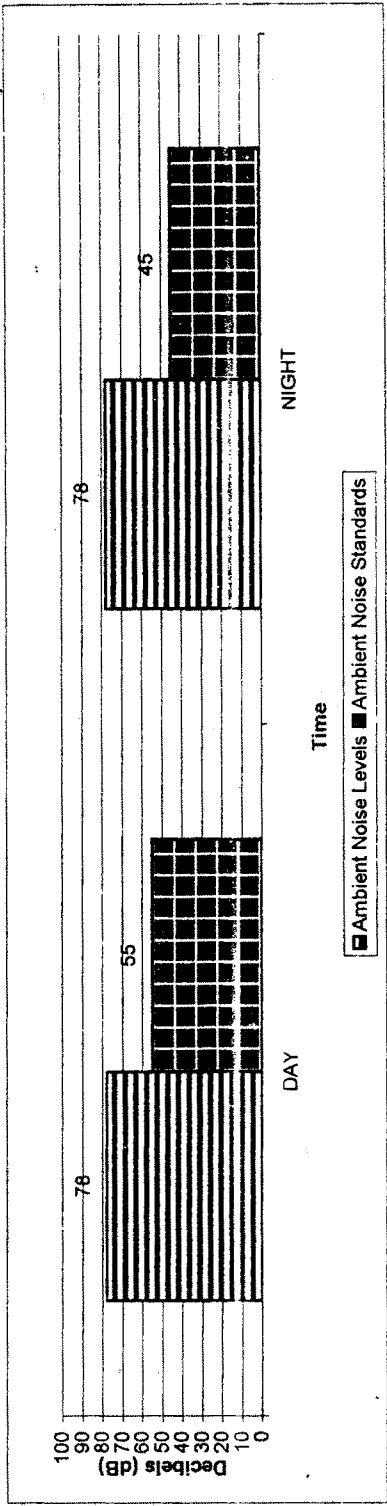


Fig 4.6(l): Comparison chart of ambient noise levels & ambient noise standards in Shivaji Peth area during Ganesh utsav.

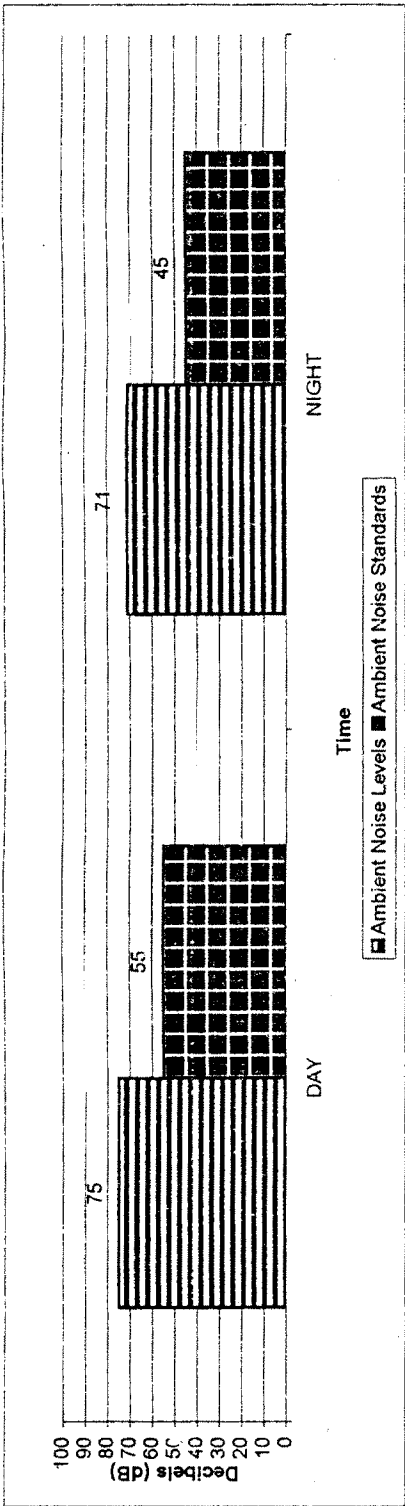


Fig 4.6(m): Comparison chart of ambient noise levels & ambient noise standards in Rajarampuri area during Ganesh utsav.

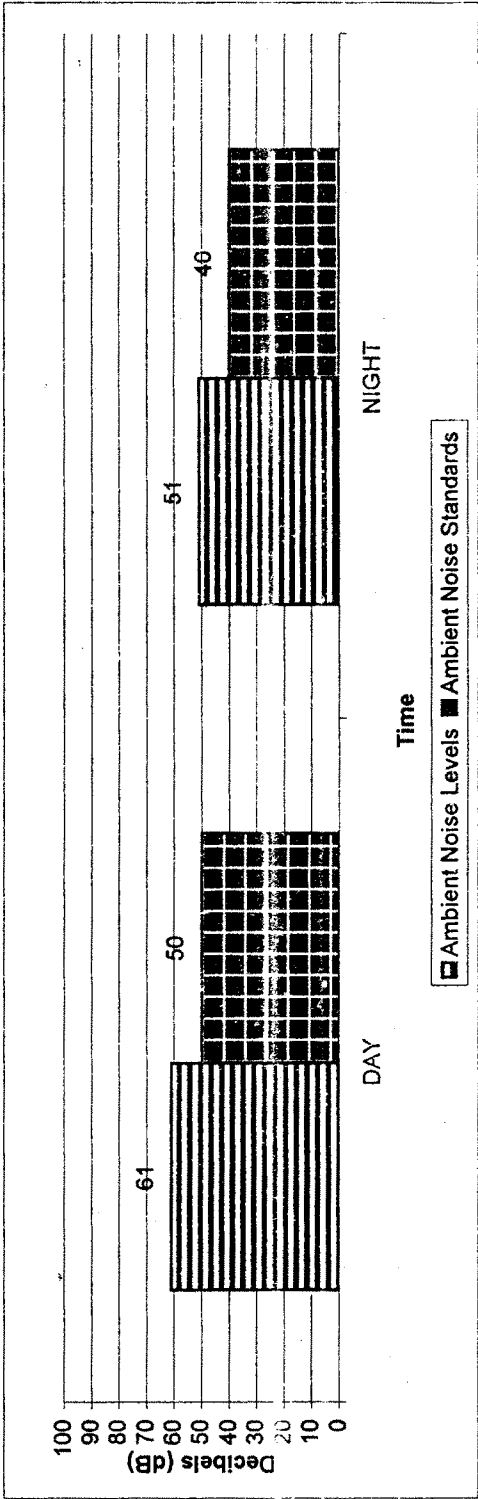


Fig 4.6(n): Comparison chart of ambient noise levels & ambient noise standards in Vidya Nagar area during Ganesh utsav.

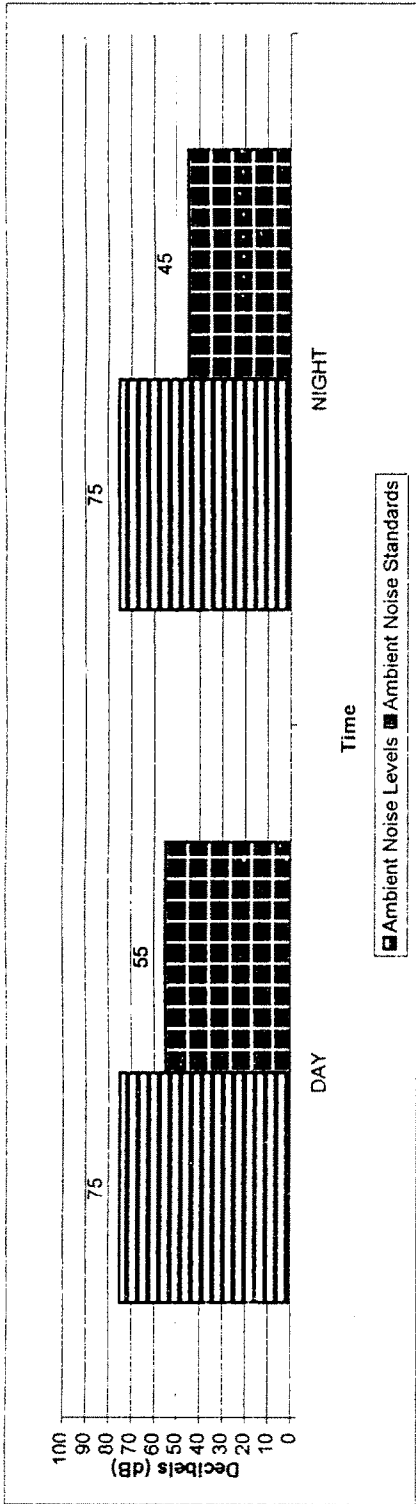


Fig 4.6(o): Comparison chart of ambient noise levels & ambient noise standards in Pratibha Nagar area during Ganesh utsav.

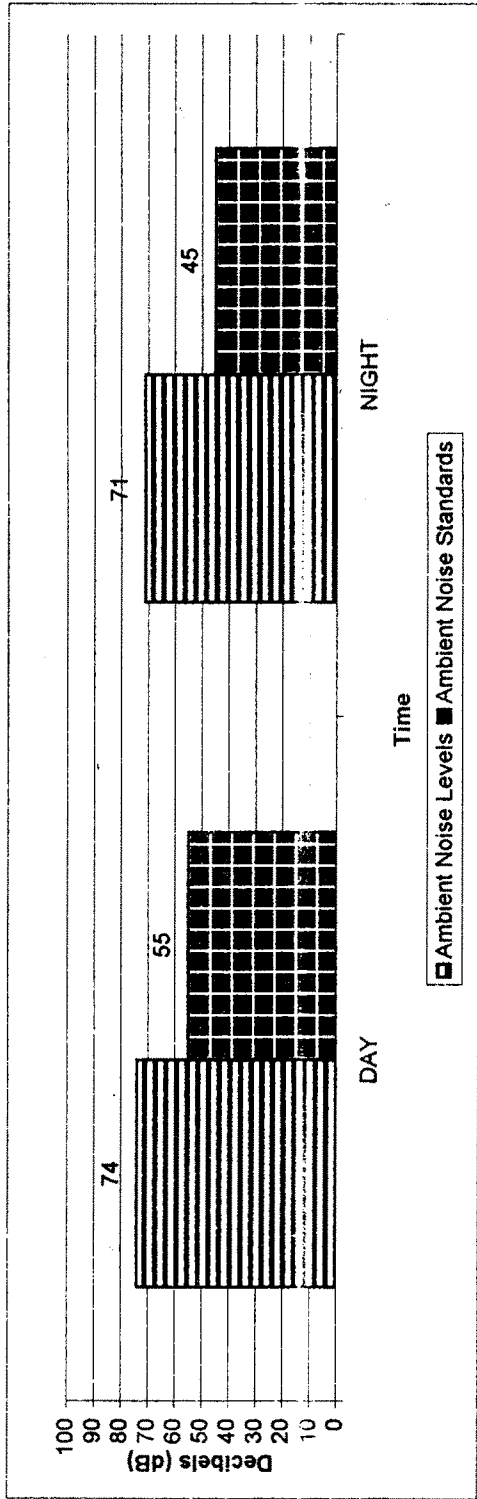


Fig 4.6(p): Comparison chart of ambient noise levels & ambient noise standards in Kasaba Bawada area during Ganesh utsav.

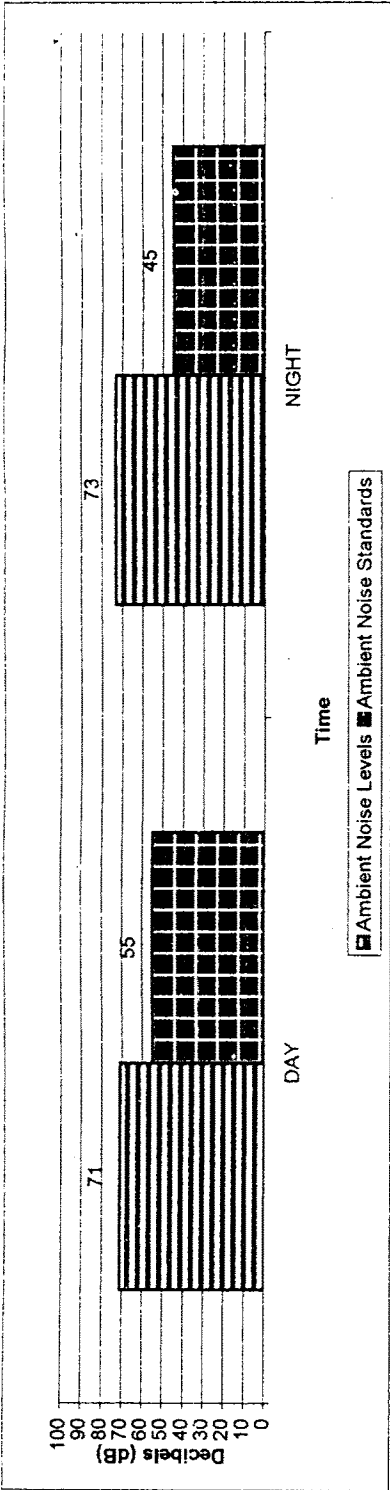


Fig 4.6(q): Comparison chart of ambient noise levels & ambient noise standards in Line Bazar area during Ganesh utsav.

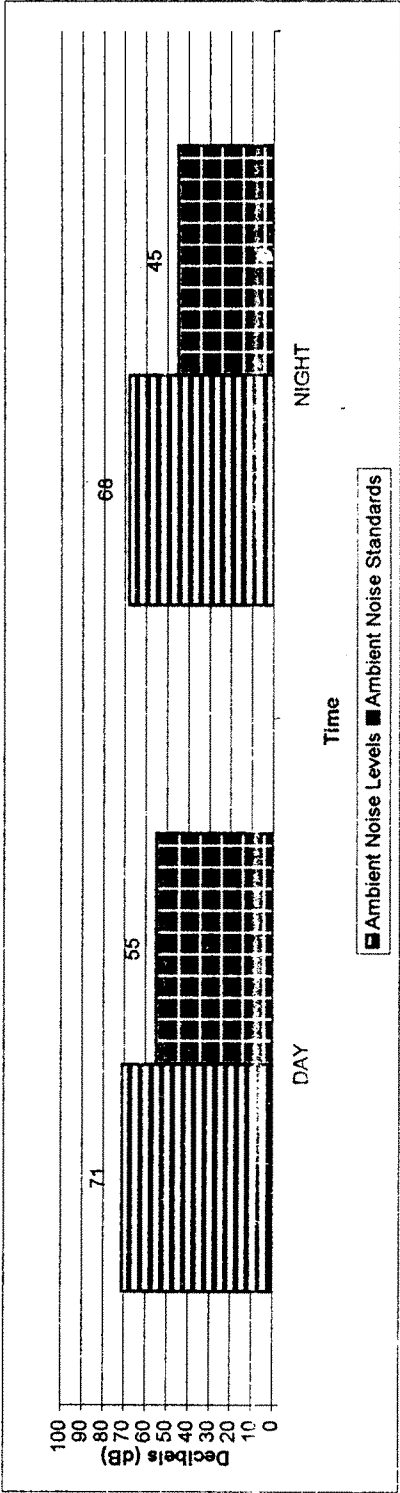


Fig 4.6(r): Comparison chart of ambient noise levels & ambient noise standards in Sadar Bazar area during Ganesh utsav.

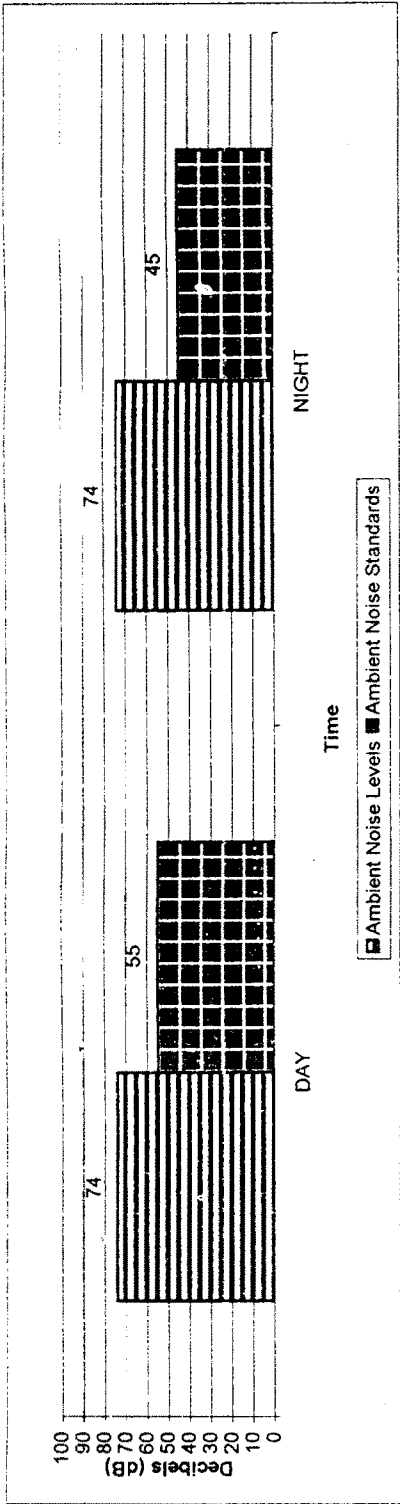


Fig 4.6(s): Comparison chart of ambient noise levels & ambient noise standards in Kadam Wadi area during Ganesh utsav.

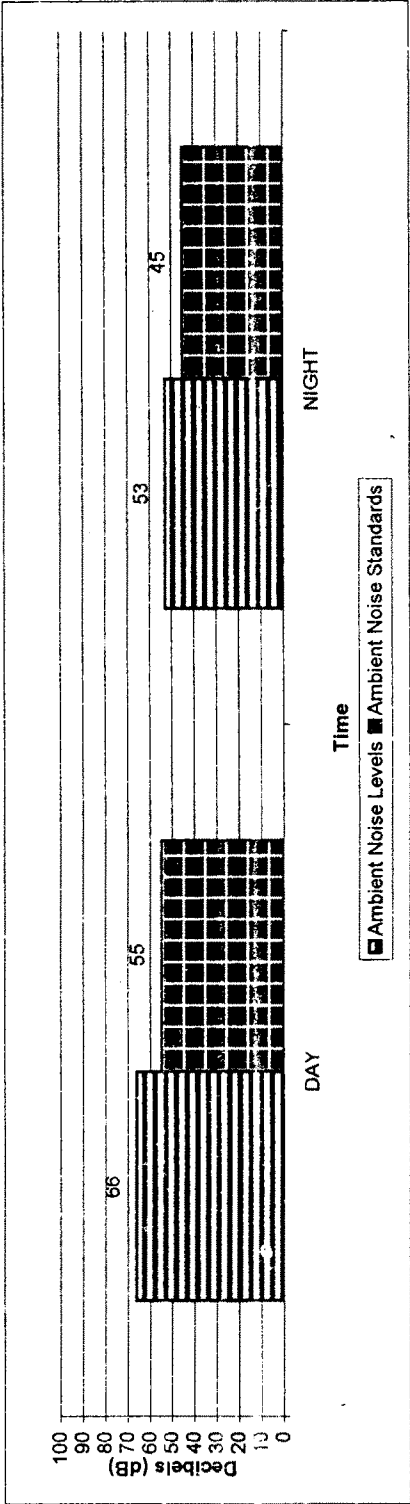


Fig 4.6(t): Comparison chart of ambient noise levels & ambient noise standards in Ruikar Colony area during Ganesh utsav.

Noise levels for each zone:

Based on the different areas studied, the noise levels prevailing in the commercial areas, residential areas, industrial area and the silent zone in Kolhapur city, compared with the noise standards, have been stated in the fig 4.7 (a to d). It is observed that the average energy equivalent noise levels during Ganesh utsav in the commercial areas of Kolhapur city are about 75 dB during the day and 74 dB during the night. Similarly, the noise level in the residential areas of Kolhapur city is about 72 dB during the day and 67 dB during the night. The silent zone showed a noise level of 61 dB during the day and 51 dB during the night. In all the above areas, the noise levels are found to be above the noise standards. The Table no.4.12 shows the noise levels prevailing in the four zones during Ganesh festival. The industrial area is however found to have sound levels within the noise standards during the day, but a marginal increase of 2 dB above the standards during the night.

Table 4.12: The noise levels prevailing in the different areas

AREA	DAY	NIGHT
Commercial	75 dB	74 dB
Residential	72 dB	67 dB
Industrial	72 dB	72 dB
Silent	61 dB	51 dB

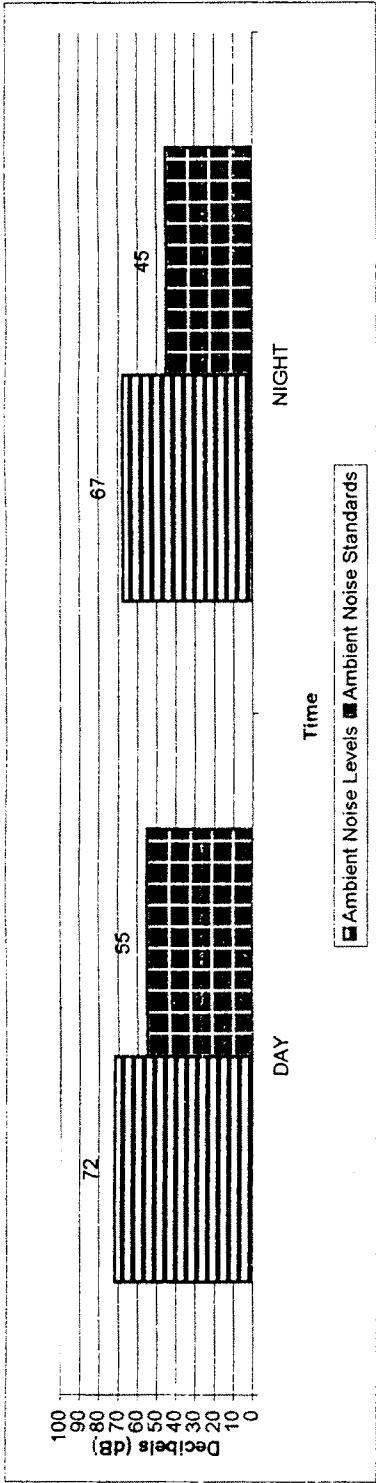


Fig 4.7(a): Comparison chart of ambient noise levels & ambient noise standards in Residential area during Ganesh utsav.

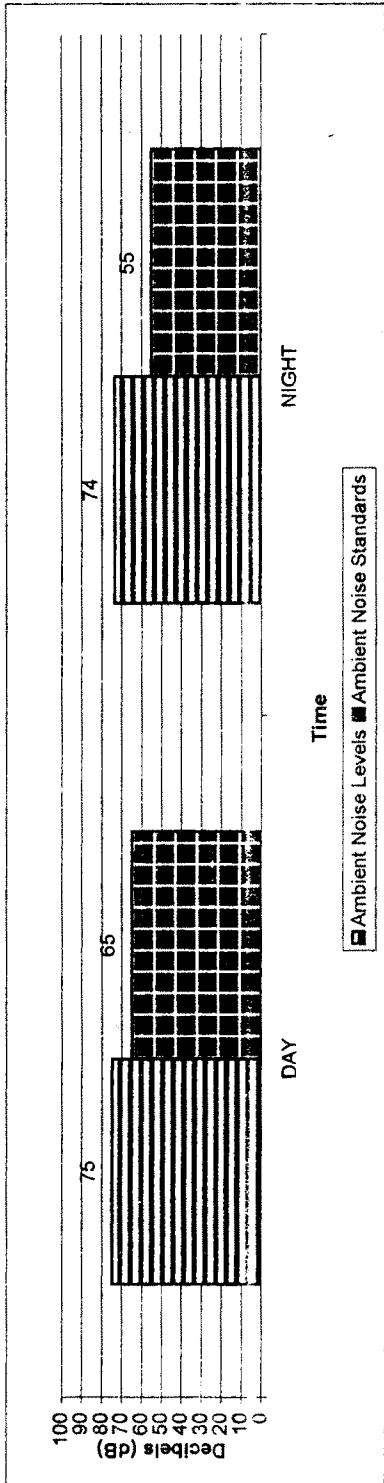


Fig 4.7(b): Comparison chart of ambient noise levels & ambient noise standards in Commercial area during Ganesh utsav.

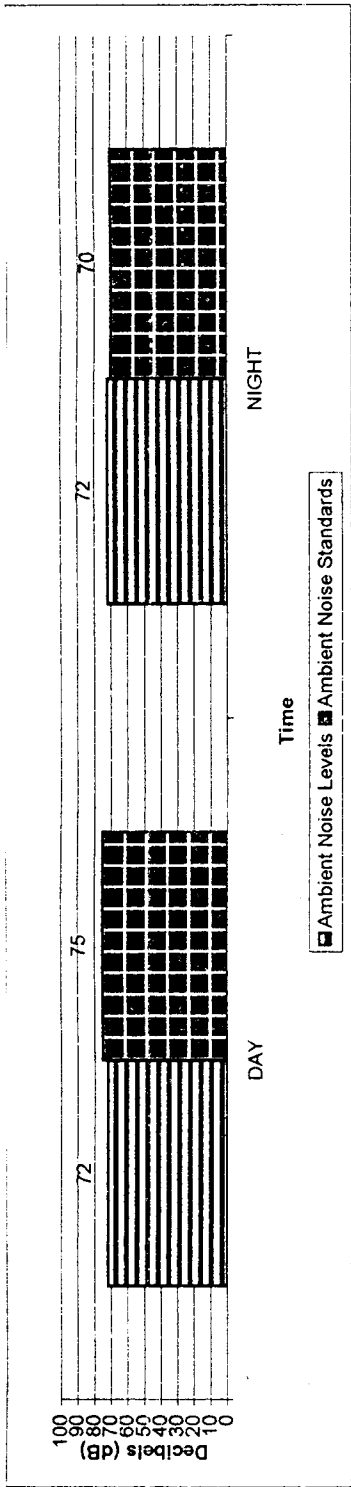


Fig 4.7(c): Comparison chart of ambient noise levels & ambient noise standards in Industrial area during Ganesh utsav.

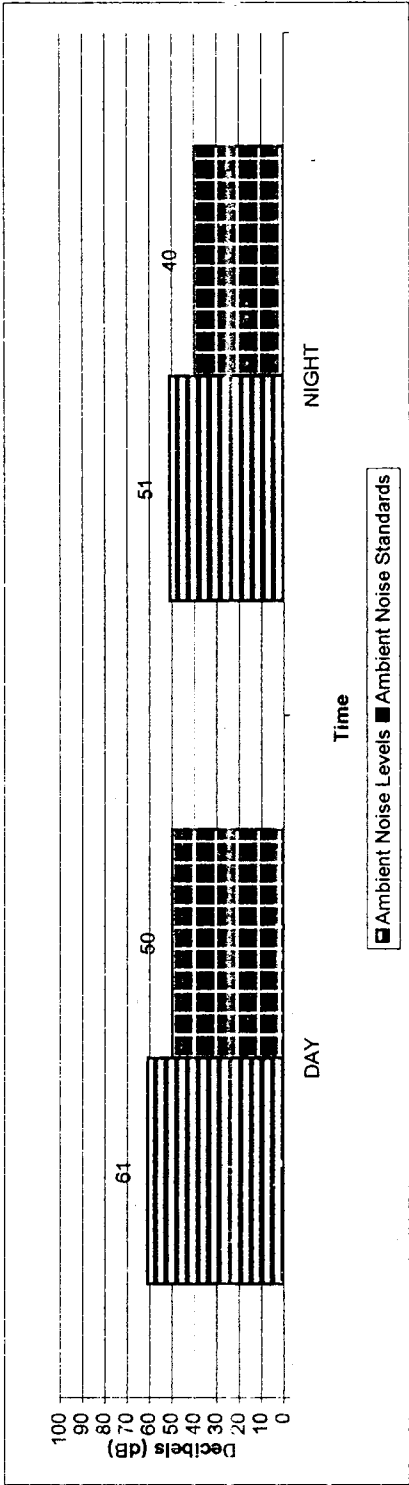


Fig 4.7(d): Comparison chart of ambient noise levels & ambient noise standards in Silent area during Ganesh utsav.

Noise level increase:

The actual increase in noise levels during day and night hours of Ganesh utsav in Kolhapur City, from the noise standards laid down by the pollution control board is stated in table 4.13. It was observed that the increase in noise levels in residential, commercial, industrial and silent areas during the day were 17 dB, 10 dB, -3 dB & 11dB respectively, while in the night hours there was an increase of 22 dB, 19 dB, 2dB & 11 dB respectively.

Table 4.13: Increase in noise level from the standard level during Ganesh utsav.

Area	D-DAY (dB)	D-NIGHT (dB)
Residential	30	36
Commercial	24	31
Industrial	-3	2
Silent	11	11

The comparison between the increase in the noise level during the non-festival season and the Ganesh utsav season is stated in fig 4.8. It is observed that the increase in noise level during Ganesh utsav is significant during the night hours unlike Diwali, where there is an all round increase. During the night, the increase is found to be about **three times** the increase in non-festival season in residential areas and **five times** the increase in non-festival season in commercial area.

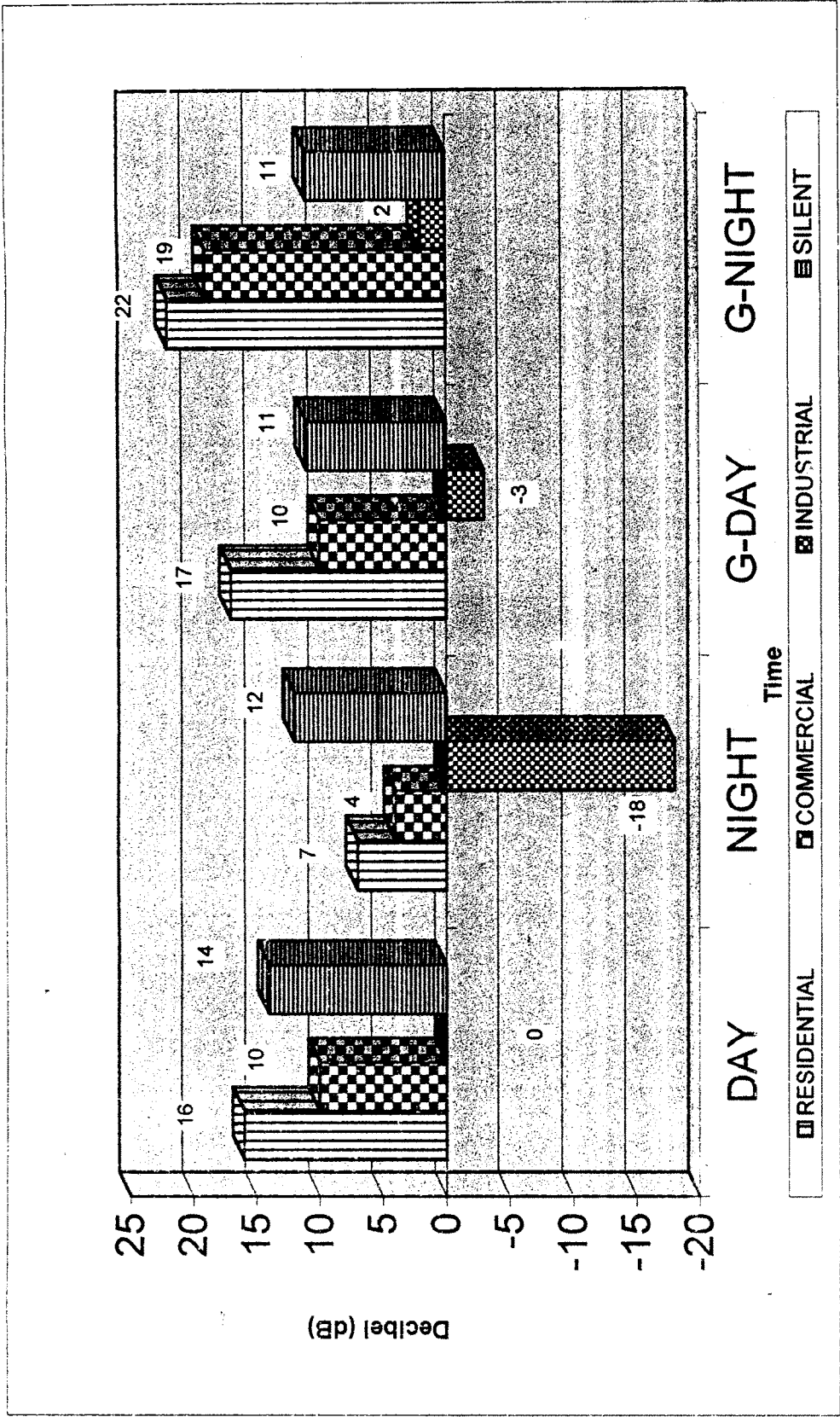


Fig. 4.8: Increase in Noise Levels during Non Festival Times and Ganesh Festival Times

4.3. Impact Analysis- Human Emotion:

The effect of Noise pollution on the health of man, wildlife and its impacts on the non-living things has been reviewed in the first chapter.

According to a study conducted by Razaque, (S.Razaque 1999) mental performance is seriously affected by noise in humans.

In the present study, a random survey was carried out to get an indication of the impact of noise on human emotions. As per this study, two questions were selected from a questionnaire used for the same purpose. The respondents were from a mixed group of youths and elderly persons, comprising of both sexes. The questions posed to them were viz.

1. Do you enjoy the noisy atmosphere prevailing during the festival time? (Yes/No)
2. Do you feel any change in your behavior with your family members/relatives because of the noisy atmosphere? (Yes/No)

Seventy percent of the respondents voted *yes* for the first question, while, thirty percent voted against it. Secondly, more than fifty percent (55%) of the respondents felt a change in their behavior with their near and dear ones, which is an indication of the emotional disturbance in people in noisy environments.

Fig. 4.9. (a) & (b) shows the graphical representation of the peoples response to the above mentioned questions.

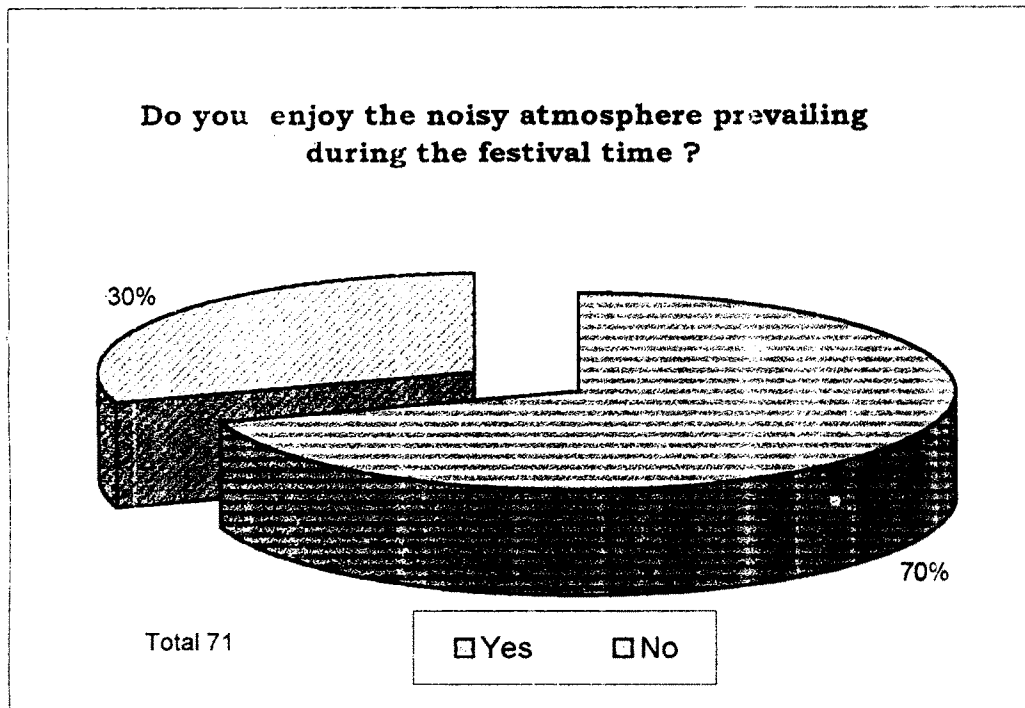


Fig 4.9(a): Graphical representation of people's response related to liking of noisy atmosphere

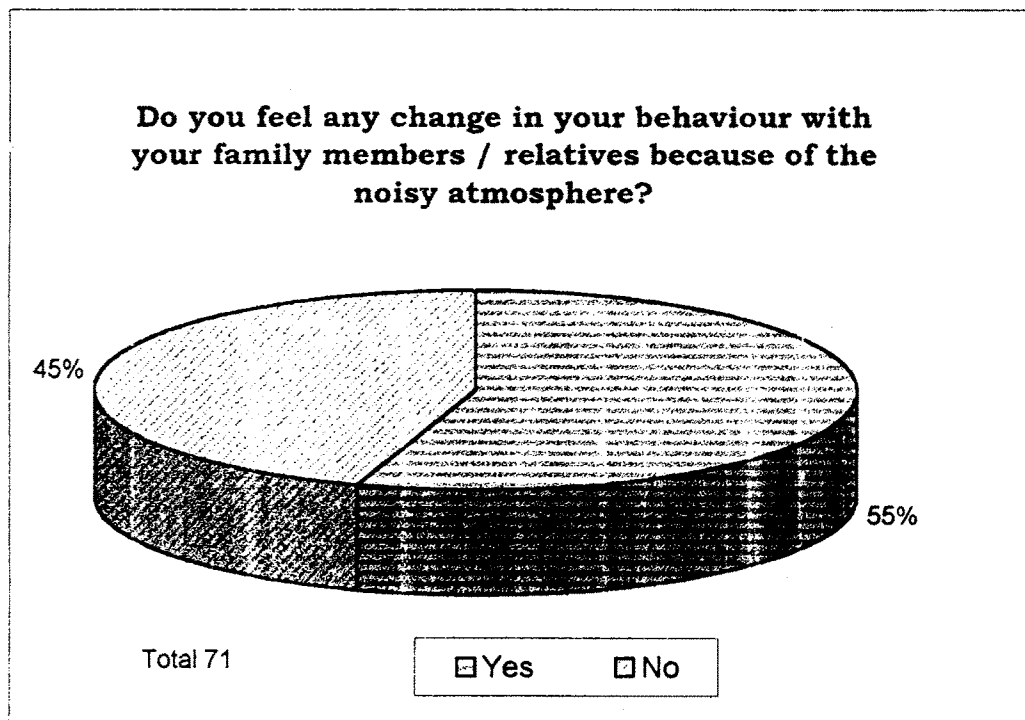


Fig 4.9(b): Graphical representation of people's response related to behavioural impact of noise.

However, the topic has not been studied in depth due to the limitations in the time frame and scope of the present investigations. It is necessary that the fact of adverse impact of noise on the human behavior should be brought to the notice of the common man who due to ignorance is responsible and also the sufferer of the pollution.

However it is expected that interesting things will be revealed if the probe is extended further.