

APPENDIX II

QUESTIONNAIRE CUM OBSERVATION SCHEDULE

SCHEDULE NO.

Name of homemaker : _____

Address for communication : _____

Telephone number for contact : _____

SECTION - I

BACKGROUND INFORMATION OF THE FAMILY

Kindly furnish the following details of each member of your family living together at present

S. No	Members	Age in years	Education	Employment* status	Occupation	Marital* status	If employed, income per month (Rs.)
1.	Respondent						
2.	Husband						
3.	Daughter I						
4.	Daughter II						
5.	Son I						
6.	Son II						
7.	Mother-in-law						
8.	Father-in-law						
9.	Other relatives						

* Employment Status : 1 Unemployed 2 Full time employment 3 Part time employment
 ** Marital Status : 1 Single 2 Married 3 Divorced 4 Separated 5 Widow

Amount of income received from any other source besides the regular job : Rs. _____

INFORMATION REGARDING THE TENURE OF HOUSING

I The house which you are occupying is : (1) Rented : _____
 (2) Owned : _____
 (3) Leased : _____

II If owned, how old is your house ? _____ yrs.
 If rented or leased, since how long are you staying ? _____ yrs.
 If rented or leased, do you have any idea regarding the age of the house ? _____ yrs.

INFORMATION REGARDING THE KITCHEN LIGHTING

I. You are requested to kindly provide the following information in the table given below regarding the existing lighting scheme of your kitchen :

- (a) Who had planned each of the given five components of lighting in the kitchen ?
- (b) Who had made the purchases of each of the components ?
- (c) When did you last change each of the given components ?

Components of lighting scheme	(a) Planned by	(b) Purchased by	(c) Changes last made (Mention year & month)
• Wiring system			
• Lamp holders			
• Switches			
• Lamps (Tubes and bulbs)			
• Lamp shades, if any			
1. Builder 2. Architect 3. Engineer 4. Husband 5. Self 6. Children 7. Any other			

II. How frequently do you clean the light fixtures in your kitchen ?

- (1) Once a week _____
- (2) Once in two weeks _____
- (3) Once a month _____
- (4) Once in three months _____
- (5) Once in six months _____
- (6) Once a year _____
- (7) Never _____

III. What are the various sources from where you get information regarding the lighting products and which are the sources that influence you and your family in making purchases of the various lighting products.

(Kindly those that refer to you in each of the columns.)

Sources	Sources of information (a)	Sources that influence purchase (b)
(1) Advertisement on T.V. and Radio		
(2) Advertisement in magazines and newspapers		
(3) Books on interior decoration / design		
(4) Visits to the market		
(5) Through family members and friends		
(6) Any other source		

IV. All of us have certain aims and objectives in our life. For example when we plan to purchase a vehicle, most of us aim for maximum mileage and minimum cost of maintenance. Similarly, you may be having certain objectives for lighting in your kitchen. Kindly list them down.

- 1.
- 2.
- 3.

V. Given the option to replan the lighting system for your kitchen, how much are you willing to spend on it ?

(a) Initial installation cost : Rs. _____

(b) Operational cost (in terms of electricity bill and maintenance cost) : Rs. _____

NOTE : Please give a very realistic answer.

VI. Are you a,

- (1) Left handed person : _____
- (2) Right handed person : _____
- (3) Person who uses both the hands at work : _____

VII. Who performs the various tasks listed below in your kitchen ?

- (a) Pre-preparation _____
- (b) Cooking _____
- (c) Cleaning up _____
- (d) Dish washing _____

1. Self 2. Husband 3. Children 4. Servant 5. Mother-in-law 6. Any other

VIII. Do you have a normal eye sight ?

- (1) Yes _____
- (2) No _____

If you, kindly give your len number, indicating whether it is minus or plus _____

IX. Kindly note down the amount you have paid for the electricity bill since last three times (i.e. for last six months). Also write the number of units of electricity consumed each time.

	Cost paid	Number of units of electricity consumed
1.	Rs. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
2.	Rs. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
3.	Rs. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

SECTION - II
ARTIFICIAL LIGHTING VALUE SCALE - PART I

DIRECTIONS : A number of statements or questions with two alternative answers are given below. Indicate your personal preferences by writing appropriate figures in the boxes to the right of each question. Some of the alternatives may appear equally attractive or unattractive to you. Nevertheless, please attempt to choose the alternative that is relatively more acceptable to you. For each question you have three points that you may distribute in any of the following combinations.

1.	If you agree with alternative (a) and disagree with (b), write 3 in the first box and 0 in the second box, thus	a 3	b 0
2.	If you agree with (b) ; disagree with (a), write	a 0	b 3
3.	If you have a slight preference for (a) over (b), write	a 2	b 1
4.	If you have a slight preference for (b) over (a), write	a 1	b 2

Do not write any combination of numbers except one of these four. There is no time limit, but do not linger over any one question or statement, and do not leave out any of the questions unless you find it really impossible to make a decision.

- (1) While planning artificial lighting in kitchen would you prefer a system that,
(a) gives shadow free illumination to add comfort in work performance
(b) keeps installation and operation cost low
- (2) While watching advertisements related to lighting on television or in a magazine, you are attracted by,
(a) exciting range of new products
(b) products that would minimise accident hazards
- (3) How do you define a well designed lighting system in the kitchen? A system that,
(a) enables better identification and appreciation of colours
(b) provides an atmosphere which is relaxing for the worker
- (4) Which of the following aspects of a switch board do you find more important for kitchens ?
(a) one that is easily accessible to operate
(b) one that ensures maximum protection from accidental contacts
- (5) Would residential kitchens benefit more from having lighting equipments that,
(a) are effective energy savers
(b) have excellent heat resistant properties
- (6) In order to create an ideal working environment in the kitchen, there should be,
(a) provision of auxiliary and emergency light for safety
(b) adequate level of illumination to carry out a given set of tasks in minimum possible time
- (7) The aim of lighting industry should be to design,
(a) lighting to avoid strain to the workers' eye while performing any task
(b) lamps that are built with advanced technology

	a	b				
	□	□				
			a	b		
			□	□		
	a	b				
	□	□				
			a		b	
			□		□	
				a	b	
				□	□	
			a		b	
	□		□			
Total						
	R	S	T	X	Y	Z

- (8) With reference to kitchen lighting, you strongly hold an opinion that lighting should,
- (a) provide comfortable environment to the worker
 - (b) be energy efficient
 - (c) increase the pace (speed) of work
 - (d) not activate accidents
- (9) Which among the following aspects of kitchen lighting interest you ?
- Lighting,
- (a) to achieve economy
 - (b) as an aid for efficient working
 - (c) for shadow proof environment
 - (d) to create a modernised look in the room.
- (10) Viewing the lighting of a properly designed kitchen would you tend to think of it in terms of provision for,
- (a) visual appeal
 - (b) visual comfort
 - (c) visual safety
 - (d) work efficiency.
- (11) Today, the lighting needs of families can be fulfilled by,
- (a) reflector lamps to give shadow free environment
 - (b) innovative lamps to fulfill the desire for modernity
 - (c) energy saving lamps to reduce power consumption
 - (d) decorative lamps to enrich the room environment
- (12) The real skill in designing lighting for a kitchen is to,
- (a) create pleasing and dramatic visual effects
 - (b) permit safe movements at work place
 - (c) provide diffused light
 - (d) suit the varying needs of the worker economically
- (13) The best lighting design schemes for kitchen should provide the following characteristics,
- (a) every nook and corner being well-lighted to avoid accidents
 - (b) reduction in installation cost and electricity bill
 - (c) provision of adequate illumination to perform general and specific tasks
 - (d) utilization of lighting products that are in line with the latest trend
- (14) Do you think a good lighting system for kitchen should aim at,
- (a) having precise beam control at work surfaces
 - (b) reducing consumption of electric power
 - (c) provision of rudimentary safety to the worker
 - (d) evoking a sense of elegance in the room
- (15) If you could influence the academicians in your local universities to make revisions in curriculum, would you emphasise upon,
- (a) creation of dramatic patterns with light
 - (b) new exciting varieties of light products
 - (c) functional efficiency through lighting
 - (d) low cost lighting designs

	b		c		
		d		a	
	a		b		c
		d			
		c		b	a
			d		
				a	
	c	b			d
			b		a
				c	
	d				
		a			
	b		c		
				d	
			a		
	b				d
			c		
		b			a
	d		c		

Total					
	R	S	T	X	Y
					Z

DIRECTION : Given below are some statements regarding your physical and mental well being working under the existing lighting conditions (Natural and artificial) in the kitchen. Read them carefully and tick only those items which refer to you.

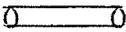
1. _____ I find the kitchen very dark and gloomy.
2. _____ I feel heaviness of the eyes while working in the kitchen.
3. _____ I find it difficult to clearly see the colour of the food item being cooked.
4. _____ I have to strain my eyes to assess the food item for its crispness / consistency / doneness while cooking.
5. _____ I feel tired all the time while working in the kitchen.
6. _____ I don't feel like working in the kitchen.
7. _____ I feel heaviness in the head.
8. _____ I often get headaches.
9. _____ I get easily irritated.
10. _____ I don't feel interested enough in cooking in the kitchen.
11. _____ I don't feel happy while working in the kitchen.
12. _____ I feel strain in my eyes when I work for a long time in the kitchen.
13. _____ I often find it difficult to locate various items stored within the storage cabinets in the kitchen.
14. _____ I am unable to clearly read the labels on the bottles and jars in the kitchen.
15. _____ I don't find an aesthetically pleasing environment in the kitchen.
16. _____ I find it inconvenient to work in the kitchen because of the shadow falling on the work place.
17. _____ I find it difficult to clean utensils in the sink especially one with intricate designs e.g. cut glass.
18. _____ I find the kitchen environment very dull.
19. _____ I experience light directly falling in my eyes creating discomfort while working in the kitchen.
20. _____ I don't feel like doing anything in the kitchen.
21. _____ I am interested in working but the kitchen environment puts me off.
22. _____ I feel edgy while working in the kitchen.
23. _____ I find it irritating to put extra effort to take the cooking pan outside the kitchen every time to assess the colour of the food.
24. _____ I experience strain while working in the kitchen for a long stretch.

SECTION – III

In this section you are requested to display your preferences for artificial lighting in the kitchen. Though you may have preferences, you may not be able to implement them in your kitchen. Thus your preferences may not reflect the lighting scheme installed in your existing kitchen.

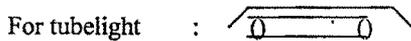
In order to answer this part of the questionnaire carefully study the picture of the kitchen being given to you. The three major work centres have been marked in the picture as A, B and C.

- A - Cooking and Preparation centre
- B - Sink centre
- C - Refrigeration centre

Suppose you were required to work in this kitchen, under what kind of lighting conditions would you prefer to work? Kindly indicate your preferences for artificial lighting on the given drawing of the kitchen by using the symbol  for fluorescent lamp (tubelight) and  for incandescent lamp (bulb). Please indicate:

- (1) Preferred method of lighting (general only/combination of general and local)
- (2) Number of light fixtures and their placement (draw the symbol on either of the walls or ceiling or below the kitchen cabinets or an other place of your choice. In case if you choose to place the light fixture (s) on the opposite wall i.e. the wall which has not been shown in the given diagram, please indicate your choice on the elevation of the opposite wall that has been given adjacent to the diagram of the kitchen).
- (3) Type of lamps preferred (tubelight or bulb)
- (4) Preferred wattage for each of the lamp (tube light or bulb)
- (5) Preference for lamp with or without shade

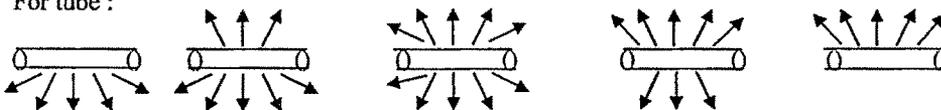
If you prefer lamp with shade kindly indicate it in the following manner



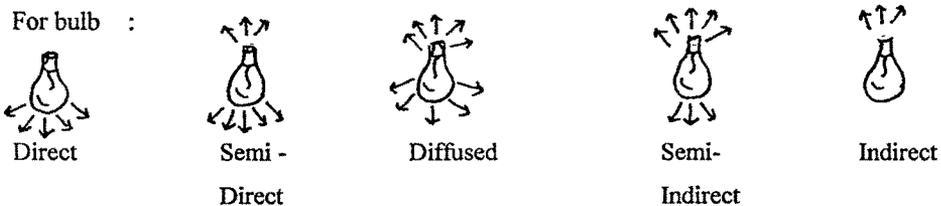
- (6) Preferred direction of light from the lamp

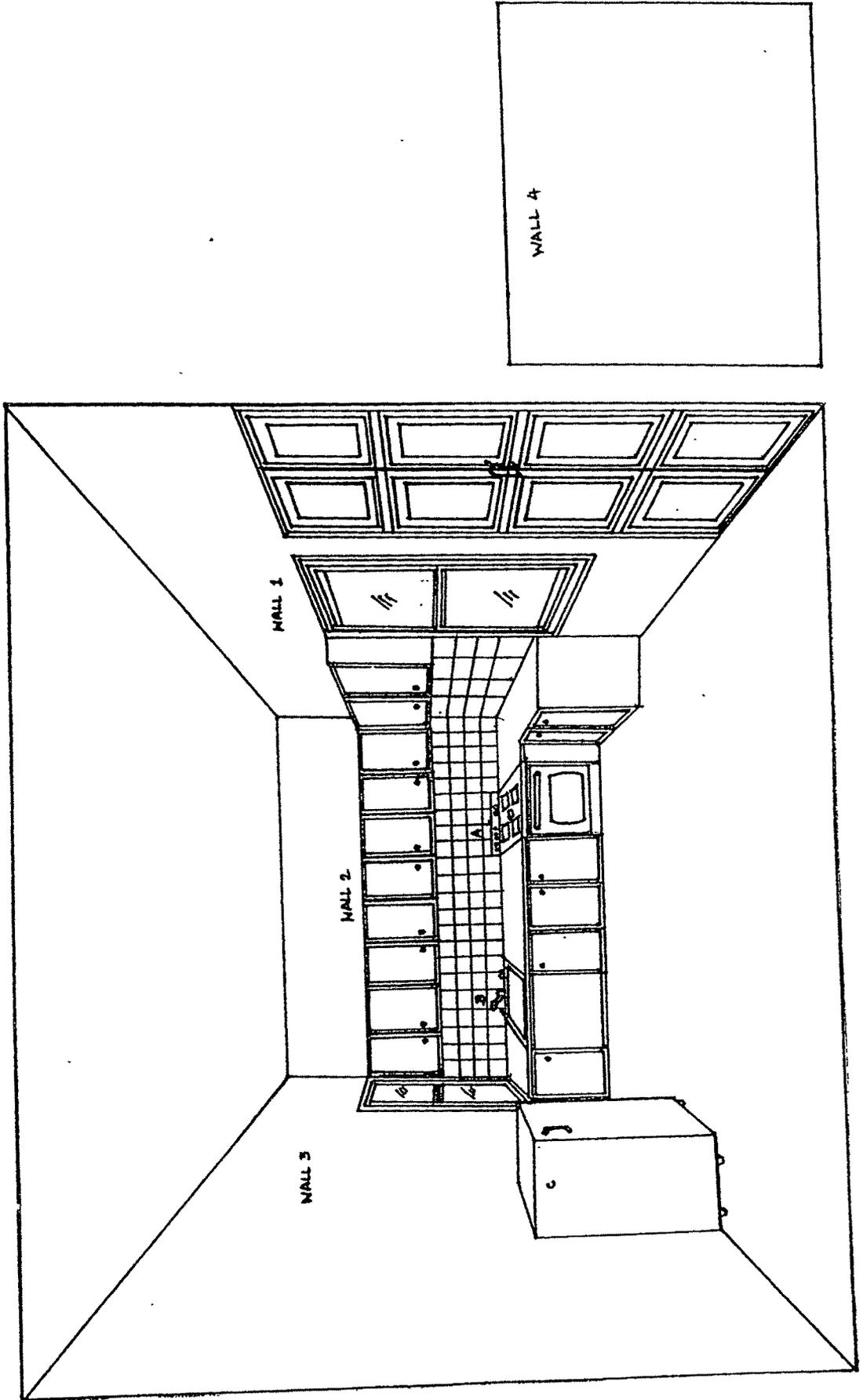
Mark the preferred direction of light with the help of arrows as been shown below,

For tube :



For bulb :





SCHEDULE NO.

This section of the questionnaire is meant to elicit information regarding your preferences for colour combination in the kitchen. Again, please remember your preferences may or may not match with the colour combination of your existing kitchen. Kindly indicate your preferences for colour combination in relation to the given drawing of the kitchen. What combinations of colour would you prefer if you were required to work in this kitchen.

NOTE : You are requested to give the name of the colour of your choice and whether you would prefer the colour as white / very light or light or medium or dark. Please give your choice for each of the given components of the kitchen.

	Components of kitchen	(a) Name of the colour preferred	(b) Whether			
			White/ very light	Light	Medium	Dark
(i)	Walls					
(ii)	Ceiling					
(iii)	Floor					
(iv)	Work platform					

ARTIFICIAL LIGHTING KNOWLEDGE TEST

Q.1 Choose the most appropriate answer among the given options.

1. Dimmers are mainly used to alter,
 - (a) colour of the light
 - (b) direction of light
 - (c) intensity of the light

2. Glare is caused by,
 - (a) highly polished surfaces
 - (b) matte surfaces
 - (c) dull coloured surface

3. A mercury lamp emits,
 - (a) white light
 - (b) yellow light
 - (c) orange light

4. The unit of Illumination is,
 - (a) Candela
 - (b) Watt
 - (c) Lux

5. As compared to a yellow coloured wall, light reflected from white wall is,
 - (a) more
 - (b) less
 - (c) same

6. Strong shadows are casted in a room by,
- (a) diffused light
 (b) direct light
 (c) indirect light
7. The light output from 60 watt bulb compared to 13 watt compact fluorescent lamp is,
- (a) more
 (b) less
 (c) same
8. Which of the following material should be used for diffusion of light,
- (a) wood
 (b) glass
 (c) metal
9. For a study area ideally the lamp should be installed,
- (a) right-hand side to the reader
 (b) left-hand side to the reader
 (c) in front side of the reader
10. Lighting in kitchen should be composed of,
- (a) general lighting
 (b) local lighting
 (c) combination of general and local lighting
11. Ideally, the mirror area in a bathroom or dressing area should be lit,
- (a) both from above and from the sides
 (b) from below
 (c) both from below and from the sides
12. An elongated electric socket which enables several luminaries to be attached along its length is called,
- (a) recessed fixtures
 (b) lighting track
 (c) cove lighting
13. To create a cool, brisk and business like environment in an interiors, which lamps can be used.
- (a) Tungsten lamps
 (b) Fluorescent lamps
 (c) Sodium lamps
14. Recessed light fixtures are built into,
- (a) the wall
 (b) the palmets
 (c) the ceiling
15. Among the lamps available in the market, which lamp is ideal for viewing television,
- (a) clear incandescent bulbs
 (b) bowl reflector lamp
 (c) milky lamp
16. The electromagnetic energy radiation that produces the sensation of sight in the human eye have wavelengths ranging from,
- (a) 1,800 to 5,800 A
 (b) 3,800 to 7,800 A
 (c) 5,800 to 9,800 A

17. In an incandescent lamp the filament that emits light when electric current passes through it, is made up of,
- (a) nichrome
 (b) lead
 (c) tungsten
18. The current flowing in a conductor is,
- (a) indirectly proportional to the voltage
 (b) directly proportional to be voltage
 (c) not related to the voltage
19. The unit of current is,
- (a) ampere
 (b) volt
 (c) ohms
20. The electricity supplied to all domestic units in the whole country is fed with,
- (a) alternating current
 (b) direct current
 (c) Eddy current
21. As per GEB, the unit cost of electricity upto 200 units in residences, as of today is,
- (a) Rs. 2.50
 (b) Rs. 3.00
 (c) Rs. 3.50
22. List down the names of any five companies that manufacture lighting fixtures in India,
- (a)
 (b)
 (c)
 (d)
 (e)

Q. 2 Match the following columns. Column A consist of list of various types of lamps available in the market and Column B indicates the uses for those lamps. Choose the correct answer from column B and write it in the space provided against column A.

A	B
<input type="checkbox"/> Pygmy lamp	(a) for stadiums
<input type="checkbox"/> Sodium lamp	(b) for viewing television
<input type="checkbox"/> Neon lamp	(c) for street lighting
<input type="checkbox"/> Halogen lamp	(d) in refrigerators
<input type="checkbox"/> Bowl reflector	(e) in electric ovens, irons, geysers

- Q. 3 According to you what are the various points that should be considered while planning lighting in the kitchen. Please answer in points.
1.
 2.
 3.
- Q. 4 Can you suggest some ways through which one can minimize power consumption of lamps in the kitchen.
1.
 2.
 3.

SECTION - IV

SCHEDULE NO.

ILLUMINATION SURVEY FORM

For Artificial Lighting in Kitchen

NAME : _____

ADDRESS : _____

: _____

PHONE NUMBER : _____

SURVEY BY : _____

DATE OF SURVEY : _____ TIME : _____ P.M.

APPROX. ROOM TEMPERATURE IN KITCHEN : _____ °C

DIMENSIONS OF KITCHEN

Length _____ cm Width _____ cm Height _____ cm

Height of work surface _____ cm Area _____ sq. meter

DESCRIPTION OF COMPONENTS OF KITCHEN

Components of kitchen	(a) Name of colour	(b) colour detail	(c) Material	(d) Texture	(e) Quality of finish	(f) Cleanliness of surfaces
Walls						
Ceiling						
Floor						
Work surfaces						
Splash backs						
Door & windows						
Storage cabinets						
Refrigerator						
Furniture Pieces, if any						

(a) Name of colour : 1. Red 2. Blue 3. Yellow 4. Green 5. Orange 6. Purple
7. Brown 8. White 9. Grey 10. Black(b) Colour Detail : 1. White or very light colours 2. Light colours 3. Medium shades 4.
Dark shades(c) Material : 1. Lime wash 2. Distemper 3. Oil base emulsion 4. Wall paper 5.
Cemented 6. Kota stone 7. Mosaic 8. Marble 9. Granite 10.
Ceramic tiles 11. Steel 12. Sunmica 13. Glass 14. Wood-varnished
15. Wood painted 16. Wood laminated

(d) Texture : 1. Smooth 2. Medium 3. Rough

(e) Quality of finish : 1. Glossy 2. Medium 3. Matte

(f) Cleanliness of surfaces : 1. Clean 2. Moderately dirty 3. Decidedly dirty

DESCRIPTION OF LIGHTING SYSTEM

COMPONENTS OF LIGHTING SYSTEM		NUMBER OF LIGHT FIXTURES			
		1	2	3	4
(a)	Type of lighting				
(b)	Type of light fixture				
(c)	Location of light fixture				
(d)	Mounting height of light fixture				
(e)	Type of lamp				
(f)	Details of lamp				
(g)	Wattage of lamp				
(h)	Manufacturer's name				
(i)	Use of shade				
(j)	Shape of shade				
(k)	Material for shape				
(l)	Transparency of shade				
(m)	Colour of shade : internal				
	external				
(n)	Direction of light				
(o)	Maintenance condition				
(p)	Date of installation of lamp				
(q)	Approx hours of use/day day time				
	since installation : night time				
(r)	Most frequently used lamp(s) to perform various tasks				
(s)	Lamp use for performing tasks requiring very short duration of time				

- (a) Type of lighting : 1. General 2. Local
- (b) Type of light fixture : 1. Surface mounted 2. Pendent 3. Recess
- (c) Location of light fixture : 1. Wall 2. Ceiling 3. Below the cabinets
- (d) Mounting height (cm) : 1. 200-225 2. 226-250 3. 251-275 4. 276-300
5. 301-325 6. 326-350
- (e) Type of lamp : 1. Incandescent 2. Linear fluorescent 3. Compact fluorescent
- (f) Details of lamp : 1. Incandescent - 1.1 Clear 1.2 Milky 1.3 Silver bowl
2. Linear fluorescent - 2.1 Standard 2.2 Slim
- (g) Lamp wattage : 1. 15W 2. 18W 3. 20W 4. 25W 5. 36W 6. 40W 7. 60W 8. 100W
- (h) Manufacturer's name : 1. Philips 2. Crompton Greaves 3. Bajaj 4. Sylvania Laxman
5. Cema 6. Surya 7. Mayur 8. Anchor 9. Richtone
10. Hi-brite 11. Western
- (i) Use of shade : 1. Yes 2. No
- (j) Material for shape : 1. Glass 2. Plastic 3. Acrylic 4. Metal
- (k) Transparency of shade : 1. Transparent 2. Transluscent 3. Opaque
- (l) Colour of shade : 1. Red 2. Blue 3. Yellow 4. Green 5. Orange 6. Purple
7. Brown 8. White 9. Grey 10. Black
- (m) Direction of light : 1. Direct 2. Semi-direct 3. Diffused 4. Semi-indirect 5. Indirect
- (n) Maintenance condition : 1. Good 2. Medium 3. Poor

SCHEDULE NO.

QUALITY OF LIGHT

		At cooking range	At pre-preparation area	At sink area
(a)	Shadow			
(b)	Direct glare			
(c)	Reflectance glare			

- (a) Shadow : 1. Nil 2. Soft 3. Medium 4. Sharp
 (b/c) Glare : 1. Unnoticeable 2. Noticeable 3. Just admissible
 4. Disturbing 5. Unbearable

LAYOUT OF KITCHEN AND LUXMETER READINGS

Points to be marked on the layout :

- (a) Direction of the room
- (b) Placement of doors and windows, and their relation to other rooms or to the outside.
- (c) Placement of work centres : sink, cooking range, pre-preparation area and refrigerator.
- (d) Placement of furniture pieces, if any
- (e) Placement of storage units
- (f) Position of light points

* Kindly indicate your satisfaction regarding the present lighting condition in your kitchen.

	Satisfied	Neutral	Dissatisfied
Natural lighting			
Artificial lighting			

SCHEDULE NO.

SECTION - V
DAYLIGHT SURVEY SHEET

Name : _____ Address : _____
Phone No. : _____

SOLAR ORIENTATION OF THE KITCHEN

			N	NE	E	SE	S	SW	W	N W			
1.	Number of exposed walls	Wall 1											
		Wall 2										L*	W*
2.	Number of exposed windows	Window 2											
		Window 2											
3.	Number of exposed doors	Door 1											
		Door 2											

* L = Length W = Width Tmt = Treatment

Treatment : 1=Transparent Glass; 2=Translucent Glass; 3=Glass Panels with Wooden Frame
 4=Wood; 5=Metal Jali; 6=Metal Grill

RELATIONSHIP OF THREE WORK CENTRE(S) IN RELATION TO THE SOURCE OF LIGHT

Position of light source	Natural light					
	CR		PP		Sink	
	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂
Left						
Right						
Front						
Back						

OUTDOOR ILLUMINATION : lux

LUXMETER READINGS