

## **PROJECT PROFILE ON COMPACT FLUORESCENT LAMP (CFL)**

**1. PRODUCT** : COMPACT FLUORESCENT LAMP (CFL)

**2. PRODUCTION CAPACITY** : 30,000 Nos.

**3. YEAR OF PREPARATION** : 2010 -11

**4. PREPARED BY** : ELECTRONICS DIVISION

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## **1. INTRODUCTION**

Compact Fluorescent light bulbs, also known as CFLs, are an eco-friendly alternative to standard incandescent light bulbs. CFLs can be screwed into the same sockets as other light bulbs and provide very comparable lighting. CFLs are easily recognizable due to their distinct twisting shape. These “green” light bulbs have a host of benefits that can help improve the planet, our home and finances. One of the greatest benefits of compact fluorescent light bulbs is their energy efficiency. A CFL uses 50 to 80 percent less energy than other light bulbs. While many consumers are dissuaded by the higher initial cost of a CFL these light bulbs must be replaced less often than incandescent bulbs. Compact fluorescent lights can have a dramatically extended lifespan, lasting as much as 10 times longer than their incandescent counterparts. While standard incandescent bulb will last for a year, a CFL can last anywhere from 8 to 10 years. Furthermore, a 75-watt incandescent bulb can be replaced by a 20-watt CFL bulb. One can receive the same amount of light while paying for far less energy. Replacing just one incandescent bulb with a CFL can prevent as much as 450 lb. of carbon dioxide from entering the atmosphere. Compact fluorescent light bulbs can be used in almost any light fixture that accepts an incandescent bulb. CFLs can be used in everything from table lamps to ceiling fixtures. Specially designed CFLs are also available for more unique types of lighting. A three-way CFL can be used in lighting fixtures with a three-way setting. Though CFLs were initially unsuitable for dimmer switches, dimmable CFLs are now available as well. While compact fluorescent lighting is ideal for many situations, it must be used in the right way to reap the full benefits.

## **2. MARKET POTENTIAL :**

The average rated life of a CFL is between 8 and 15 times that of incandescent. CFLs typically have a rated life-span of between 6,000 and 15,000 hours, whereas incandescent lamps are usually manufactured to have a lifespan of 750 hours or 1,000 hours. For a given light output, CFLs use 20 to 33 percent of the power of equivalent incandescent lamps.

Electrical power equivalents for differing lamps

Compact Fluorescent (W)	Incandescent(W)	Minimum light output (lumens)
9-13	40	450
13-15	60	800
18-25	75	1,100
23-30	100	1,600
30-52	150	2,600

If a building's indoor incandescent lamps are replaced by CFLs, the heat produced due to lighting will be reduced. At times when the building requires both heating and lighting, the heating system will make up the heat. If the building required both illumination and cooling, then CFLs also reduce the load on the cooling system compared to incandescent lamps resulting in two concurrent savings in electrical power. The luminous efficacy of CFL sources is typically 60 to 72 lumens per input watt of electric power, versus 8 to 17 lm/W for incandescent lamps. This gives an efficiency range of 17 to 21% of a theoretical ideal white light source giving 347 lumens per radiant watt for a tri-phosphor spectrum. While CFLs require more energy in manufacturing than incandescent lamps, this embodied energy is more than offset by the fact that they last longer and use less energy than equivalent incandescent lamps during their lifespan. While the purchase price of an integrated CFL is typically 3 to 10 times greater than that of an equivalent incandescent lamp, the extended lifetime and lower energy use will more than compensate for the higher initial cost. CFLs are extremely cost effective in commercial buildings when used to replace incandescent lamps. Thus CFL has got an enormous market potential.

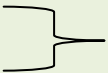
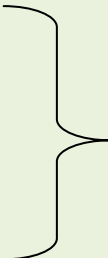
### **3. BASIS AND PRESUMPTIONS :**

1. The unit is proposed to work on a single shift basis of 8 hrs. duration and the percentage of capacity utilization is 75% and 25 working days per month.
2. The unit is expected to achieve the rated capacity utilization within 12 months period of time.
3. The labour and wages are taken as per the prevailing market rate.
4. Interest rate is taken as 16%

5. Operating period of the project is expected to be 16 years.
6. Cost of Plant & Machinery and Raw Material etc. are taken as per the prevailing market rate.
7. The project preparation cost etc. whenever required could be considered under pre-operative expenses.

It is also proposed that all components like heating element, lugs, switches etc. are to be procured from other industries and unit will do the assembly and testing of subassembly and final assembly and packing.

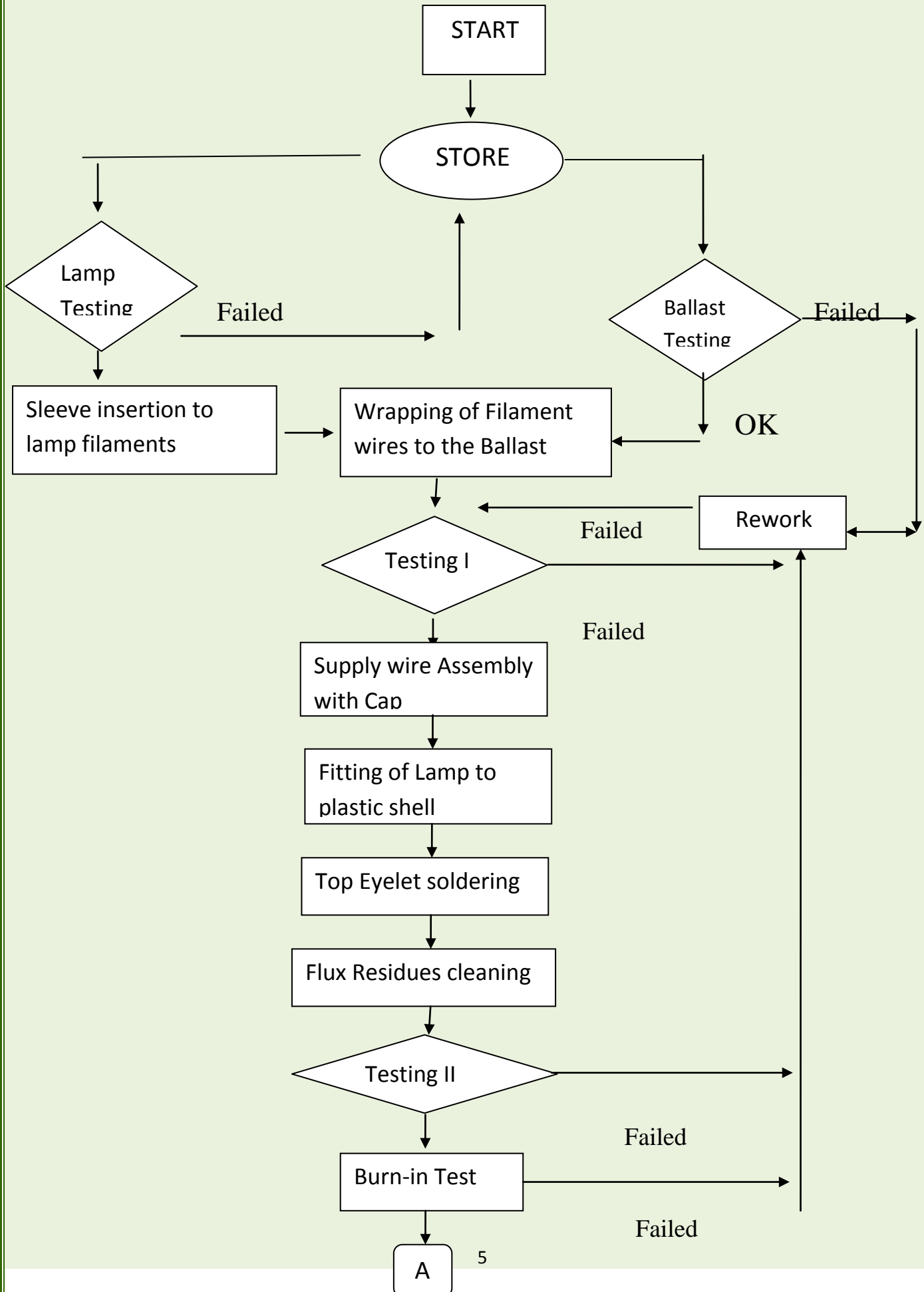
#### **4. IMPLEMENTATION SCHEDULE\_:**

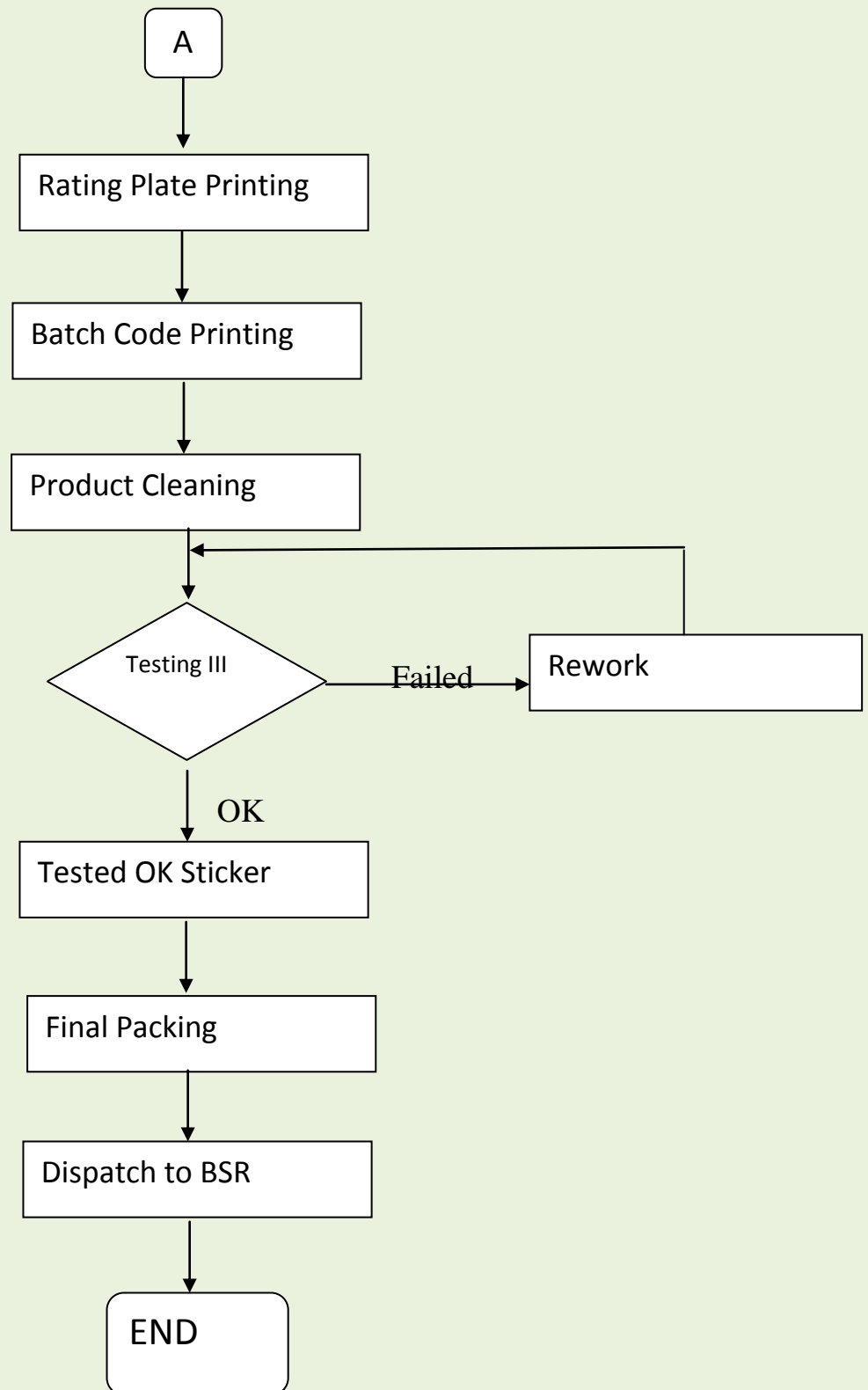
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|----|---|---|------------------------|
| 1. | Preparation of Project Report                       |    | 1 Month                |
| 2. | EM filing & other formalities                       |   |                        |
| 3. | Sanction of loan from financial institute           |   | 3 Months               |
| 4. | Plant & Machinery                                   |  |                        |
|    | i) Placement of orders                              |   |                        |
|    | ii) Procurement                                     |   |                        |
|    | iii) Power connection/classifications               |   |                        |
|    | iv) Instrument erection of Machine & test equipment |   |                        |
|    | v) Recruitment of technical persons                 |   |                        |
| 5. | Procurement of Raw Material                         |   | 1 Month                |
| 6. | Trial Production                                    |   | 9 <sup>th</sup> Month  |
| 7. | Commercial Production                               |   | 10 <sup>th</sup> Month |

#### **5. TECHNIAL ASPECTS**

I PROCESS OF MANUFACTURE: Flow chart of CFL is as follows:-

## PROCESS FLOW CHART FOR CFL





**II QUALITY STANDARDS :** ISO 9001/2008, BIS:15011.

**III. PRODUCTION CAPACITY PER ANNUAL**

Quantity : 30,000

Value : 27,00,000/-(Rs.)

**IV. MOTIVE POWER :** 5 KW (3,000/- Per month electrical charges)

**V. POLLUTION CONTROL :**

Manufacturing of CFL does not produce any pollution & hence does not require pollution control certificate from pollution control Board. However manufacturing of CFL is categorized under no pollution producing industry.

**III. ENERGY CONSERVATION REQUIRMENTS:**

1. Use of energy saver ( 20w) in place of fluorescent tube 40 watt.
2. Periodic maintenance of different electric equipments
3. Adoption of energy conserving technologies, production aids and testing facilities
4. Optimum use of electrical energy during testing of CFL LIGHTING
5. Proper selection of layout of lighting system
6. Timely switch on and off of the system
7. Use of Electronic choke in place of wire wound choke
8. Proper maintenance of the lighting system such as periodical cleaning of tubes and fixtures.

**6. FINANCIAL ASPECTS :**

## A. FIXED CAPITAL

(i) Land & Building(300 Sq MTRS.) - Rent @12,000/- per month

### (ii) MACHINERY

Sr. No.	Description	Ind/Imp	Qty.	Value
1.	Tesla machine (1 <sup>st</sup> stage checking)	Ind.	02	14,000/-
2.	Grinding Tool for Wire Cleaning.	Ind.	02	10,000/-
3.	PCB soldering station	Ind.	02	16,000/-
4.	Cap Notching machine	Ind.	02	5,000/-
5.	Eyelid soldering	Ind.	02	16,000/-
6.	Pad Printing machine	Ind.	01	10,000/-
7.	Sleeve cutting machine	Ind.	02	8,000/-
			TOTAL	79,000/-

### (iii) EQUIPMENTS

Sr. No.	Description	Ind/Imp	Qty.	Value
1.	Digital Multimeter	Ind.	02	3,500/-
2.	Megger 1000V DC	Ind.	02	7,500/-
3.	Testing Panel with Ammeter,Voltmeter	Ind.	01	10,000/-



#### Multimeter

4.	Jigs & fixtures for fixing of P.C.B.	Ind.	02	1,000/-
5.	Manual series testing jig for C.F.L	Ind.	01	<u>2,000/-</u>
			total	24,000/-

TOTAL COST OF MACHINERY & EQUIPMENTS: 79,000/- + 24,000 =  
1,03,000/-

(A) Electrification & Installation Charges approx. 10% of Machinery - 7,900/-

(B) Cost of Office Equipment, working tables etc - 30,000/-

(C) Preoperative Expenses - 10,000/-

Total: 7,900/- + 30,000/- + 10,000/- = 47,900/-

#### TOTAL FIXED INVESTMENT

(1) M/c and Equipments - 1,03,000/-  
(2) Prelim & prospective expenses  
(3) such as consultancy fees, elec. Bill etc. - 47,900/-

TOTAL= 1,50,900/-

#### B. WORKING CAPITAL PER MONTH

### **( I)Staff & Labour**

Sr. No.	Name of Staff	No.	Salary(P.M.)	Total(Rs.)
1.	Manager	1	7000/-	7000/-
2.	Clerk/Store Keeper	1	5000/-	5000/-
3.	Accountant	1	5000/-	5000/-
4.	Peon	1	3000/-	<u>3000/-</u>
			Total	20,000/-

### **( II) Technical Manpower**

Sr. No.	Name of Staff	No.	Salary(P.M.)	Total(Rs.)
1.	Supervisor	1	6000/-	6,000/-
2.	Skilled Worker	3	6000/-	18,000/-
3.	Semi Skilled Worker	4	4000/-	16,000/-
4.	Un-Skilled Worker	3	3300/-	<u>9,000/-</u>
			TOTAL	49,000/-

TOTAL WAGES + SALARIES == 49,000/- + 20,000/- = 69,000/-

### (III) RAW MATERIAL PER MONTH

Sr. No.	Name of Item	Qty.	Rate	Total(Rs.)
1.	Capsule(Glass Tube)	2500	10/-	25000/-
2.	PBT(Plastic Body)	2500	3/-	75,00/-
3.	B22 cap	2500	0.50/	1250/-
4.	PCB	2500	10/-	25000/-
5.	Assembly Charges	2500	2/-	5000/-
6.	Packing Charges	2500	1/-	<u>2500/-</u>
			TOTAL	66,250/-

### (IV) UTILITIES

1)Electricity 750 units @ Rs 4/- Per Unit	- 3000/-
2)Water	<u>500/-</u>
TOTAL 3500/-	

### (V) OTHER CONTINGENT EXPENSES

1)Postage & Stationary	- 3500/-
2)Repair & Maintenance	- 4000/-
3)Transport	- 4000/-
4)Adv. & Publicity	- 5000/-
5)Insurance	- <u>1000/-</u>
TOTAL - 17,500/-	

**TOTAL RECURRING EXPENSES(P.M.) ( I+II+III+IV+V)**

1)Rent of Land & Building for 1 month @12,000/- per month	-	12,000/-
2)Personnel	-	69,000/-
3)Raw Material	-	66,250/-
4)Utilities	-	3,500/-
5)Other Expenses	-	<u>17,500/-</u>
TOTAL-		1,68,250/-

**C. TOTAL CAPITAL INVESTMENT**

FIXED CAPITAL	- 1,50,900/-
WORKING CAPITAL FOR THREE MONTHS	<u>- 5,04,750/-</u>
TOTAL-	6,55,650/-

**D. FINANCIAL ANALYSIS:**

<b>I. Cost of production (per year)</b>	(Rs.)
Total Recurring cost	- 20,19,000/-
Depreciation on machinery, fixtures & prod. equipments @ 10 %	10,300/-
Dep. on office equipments @ 20%	- 6,000/-
Interest on investments @ 12 %	- 78,678/-
<b>Total :-</b>	<b>Rs. 21,13,978/-</b>

## II. Turn-over (per year)

<u>Item</u>	<u>Qty</u>	<u>Rate</u>	<u>Value (Rs.)</u>
i.) CFL 15 W	30,000 Nos.	88/-	26,40,000/-

## Net Profit per year

=Sales – Cost of Production

$$\begin{aligned} &= 26,40,000/- - 21,13,978/- \\ &= 5,26,022/- \end{aligned} \quad =$$

## Net Profit Ratio :-

Net Profit Per Year x100

Turn-over per year

$$\begin{aligned} &= \frac{5,26,022/-}{26,40,000/-} \times 100 = 19.92 \% \end{aligned}$$

## Rate of Return:-

Net Profit Per Year x100

Total Investment

$$\begin{aligned} &= \frac{5,26,022/-}{6,55,650/-} = 80.22\% \end{aligned}$$

### E. Break-even Analysis(%age of total production envisaged)

(i) Fixed Cost : (Rs. in Lakhs)

a) Depreciations (all types)	16,300/-
b) Rent on building	1,44,000/-
c) Interest on investments	78,678/-
d) 40 % of salaries & wages	27,600/-
e) 40 % of Utilities	1,400/-

f) 40 % of O. Expenses 7,000/-

Total:- 2,74,978/-

(ii) Net Profit per year :- Rs. 5,26,022/-

Break-even Point (B.E.P).:- Fixed Cost. X 100

Fixed Cost + Net Profit

=2,74,978/- X 100

2,74,978/- + 5,26,022/-

= 2,74,978/- X 100 = 34.32 %

8,01,000/-

## **ADRESSES OF RAW MATERIAL AND PLANT AND MACHINERY SUPPLIERS:**

- 1)M/s Phillips India Ltd., 68,Najafgarh Road,New Delhi.
- 2)M/s Mangal Instruments,134,Apna Bazar,Nehru Nagar, Ring Road, N.Delhi
- 3)M/s Aerosol (P) Ltd, B-90,Mayapuri,Ph-I, Ind. Area,N.Delhi.
- 4)M/s J.D. Industries,E109 Karampura,Shivaji Marg,N.Delhi.
- 5)M/s R.S.G Packaging 483-A,Oberoi compound,dilshad Garden,G.T.Road,N.Delhi.
- 6)M/s AAKRITI Exports,187,DSIDC Compound,Okhla Ind. Area, Ph-I, N.Delhi.
- 7)M/s Assam Electricals , Tinsukhia(Assam)
- 8)M/s Stesalit Ltd, Ind Area Baddi,Solan(H.P.)