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Subject: Diwali contest

The CFL's will produce same amount of luminance for less power consumption. The details of the replacement of the incandescent lamps with CFL is given below

Step Number	Description
1	The incandescent bulb present at the step 1 indicates the burden on the power plants
2	Step 2 consists of seesaw mechanism. When load increases on one side it activates the rope connected at the other side
3	Due to pulling of the rope it activates the gate and allows the ball to fall
4	The ball passes in the tunnel and activates the hand lever mechanism
5	The weight present in step 5 due to gravity presses the liquid present in the cup
6	The liquid under pressure passes into the tube and the passes through the nozzle. Due to the present of the nozzle velocity of the liquid increases
7	The liquid with high velocity touches the cup and in turn lift the hand up from the grove
8	Due to the spring action the arrangement moves forwards and in turn expands the clip type arrangement
9	Due to sudden falling of the ball on to the seesaw the weight present on other side is lifted up to the sudden exerted force on the other side
10	Due to sudden fall of weight on the seesaw it activates the ball present at step 10 and the ball moves in projectile path and falls on the pan located at step 11
11	Due to sudden fall of weight on the seesaw it activates the scissor
12	The scissor present at this step closes the blade due to force induced on the seesaw present at the step 11
13	Due to closing of the scissor it cuts the thread present which is connected to the weight and the ball
14	Due to this the ball lifts the pan
15	The another ball present on other side of the pan is falls into the tunnel at step 15
16	The ball passes through the tunnel and supplies energy to the pan connected to the rack & pinion mechanism
17	Due to moving of the mechanism the water present in the jar falls into the cup present at step 17
18	The weight of the cup increases due water
19	This activates the rack & pinion mechanism, which intern activates the hand
20	Due to pressing on the level the lever jaws open up. This releases the holding band by the lever
21	The other side of the band is connected to the weight. Due to release of the band the weight falls on to the seesaw arrangement
22	The forward moving hand out of the box activates a hammer
23	The hammer breaks the ILB present
24	Due to blasting of ILD the weight present at step 24 pulls the gear downward. The gear is connected to a rack and pinion mechanism. Due to sliding of the rack the light connected will be focused correctly at the working place “ direct focusing of the light on to the work place reduces the lot of power consumption ”
25	Due to the moving of the rack hook mechanism present at step 25 releases the rod connected to it
26	The forward moving hand activates the ball present in the tube
27	Due to activation of the hand at step 26 the ball from the tube passes through the tube and falls on to the seesaw
28	A match stick was connected to the balance mechanism. Due to rubbing action it was lighted up. Due to light pressing of the rough surface and due to the presence of the spring mechanism it pushes the ball present at the step29
29	The ball falls into the tunnel and then falls on to the balance mechanism arranged at step 30
30	The balance mechanism intern activates the gear & pinion intern opens the cork present for the bottle
31	Due to gravity the bottle falls down intern lifts the banner up which contains the life cycle improvement of the generation of the bulbs

Typical replacement of Incandescent bulbs with CFL's

Sl. No.	Incandescent Bulb	CFL Lamp
1	40 watts	7 to 9 watts
2	60 watts	13 to 16 watts
3	75 watts	18 to 20 watts
4	100 watts	26 to 27 watts

Questions

1) Estimate how large is “?” in percent?

Answer: An incandescent light “bulb” converts only **1%** of the energy in coal provided to a power plant to generate a useful energy output.

2) What is the “useful energy output” of a CFL?

Answer:

Incandescent lamp:

- 10% visible radiation
- 20% loss by conduction & convection
- 70% infrared radiation

Compact Fluorescent lamp:

- 25% visible radiation
- 45% loss by conduction & convection
- 30% infrared radiation

Therefore the useful energy output of the CFL lamp is 25%

Life time of the CFL is more than the incandescent lamps

3) Where is the energy lost on its way from coal to electricity consumed by the CFL?

Answer:

1. Boiler heat loss, latent heat loss in boiler
2. Boiler to generator coupling loss
3. Mechanical to electrical conversion loss in the generator
4. Step up transformers loss for boosting up the voltage
5. Cable Distribution losses
6. step down transformers losses

Finally the power comes to the house holds after huge losses. If we consider the power coming inside house is 100%, the usage of that power by the CFL is only **25%**

7. Therefore energy lost in CFL is **75%**

If we consider the total losses and the useful energy output is **5%** for the CFL and for the incandescent lamps is only **1%**

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