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Solar Mobile Charger Using Solar Panel

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ABSTRACT

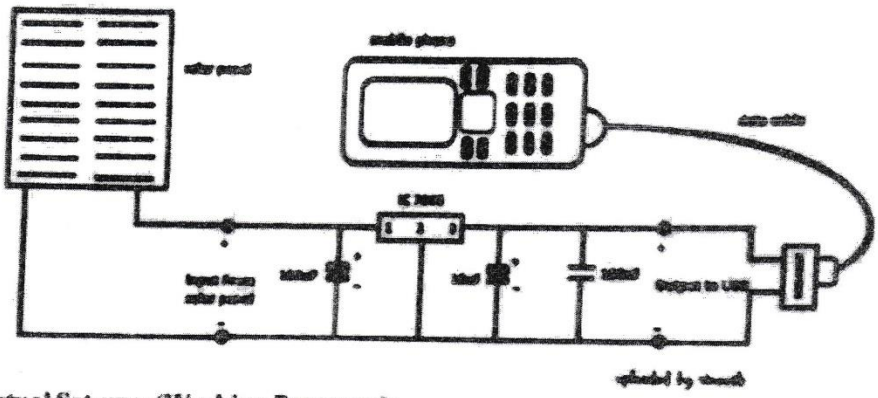
Solar energy is the renewable source of energy. By using this energy we convert solar energy into electrical energy is called photovoltaic. The sun can be used to generate electricity by using its heat & by utilizing its light in a solar cell. In today's environment conscious world, a lot of interest is being taken in alternate forms of energy. Solar power is a renewable source of energy, which has become increasingly popular in modern days. Today 80% of the energy we use comes from fossil fuels and about 1% comes from solar energy. It is estimated that the world's oil reserves will last for 30 to 40 years, whereas solar energy is forever. Solar energy has two big advantages over fossil fuels.

Introduction :-

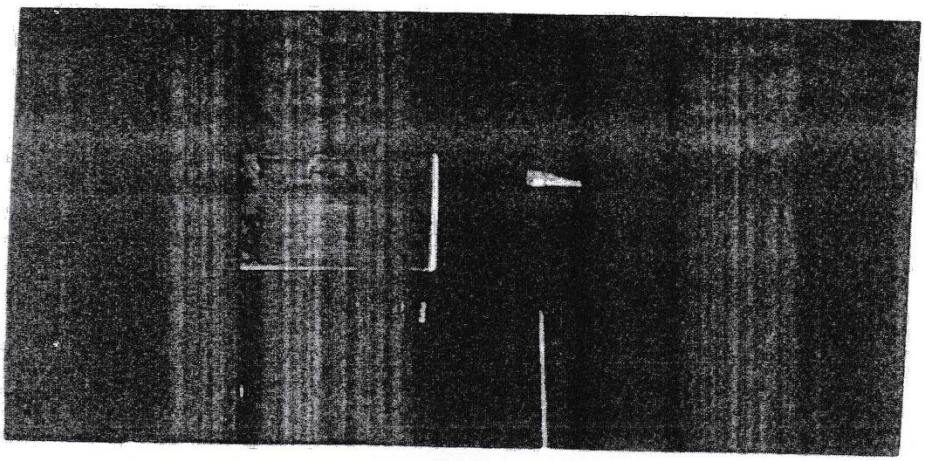
1) The sun is a star made up of hydrogen and helium gas & it radiates an enormous amount of energy every second
2) Solar cell works on principle of photovoltaic effect sunlight is composed of photons
3) These photons contain various amounts of energy corresponding to the different wavelengths of light.

4) When a photon is absorbed the energy of the photon is transferred to an atom of the cell.

Circuit Diagram:-



Actual Set-up:- (Working Processes):-

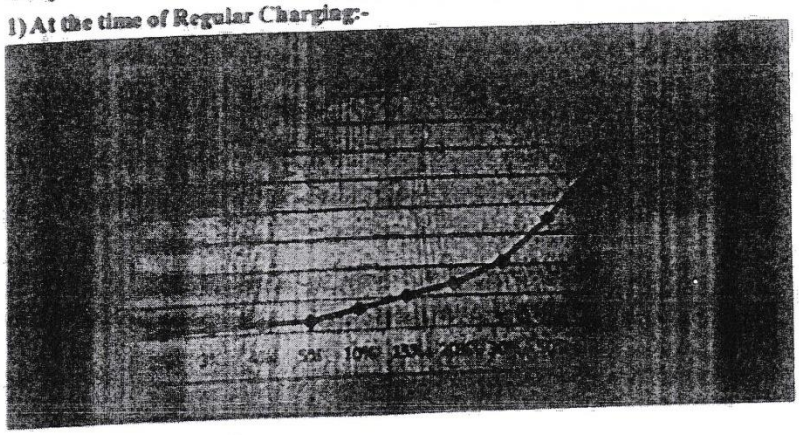


Comparison between Regular Charging and Solar charging:-

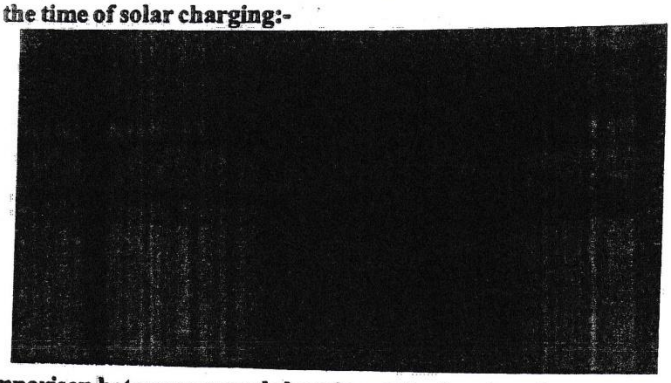
Using Normal Charging Processes		Using Solar Charging Processes	
% Of Charging	Time (Min/Sec)	% Of Charging	Time (Min/Sec)
1%	1 40	1%	1 20
2%	2 80	2%	2.40
3%	4.20	3%	3.60
4%	5 60	4%	4.80
5%	7 Min	5%	6 Min
10%	14 Min	10%	12 Min
15%	21 Min	15%	18 Min
20%	28 Min	20%	24 Min
30%	42 Min	30%	36 Min
50%	70 Min	50%	60 Min
75%	105 Min	75%	90 Min
100%	140 Min	100%	120 Min

Graphical Analysis of Charging Processes:-

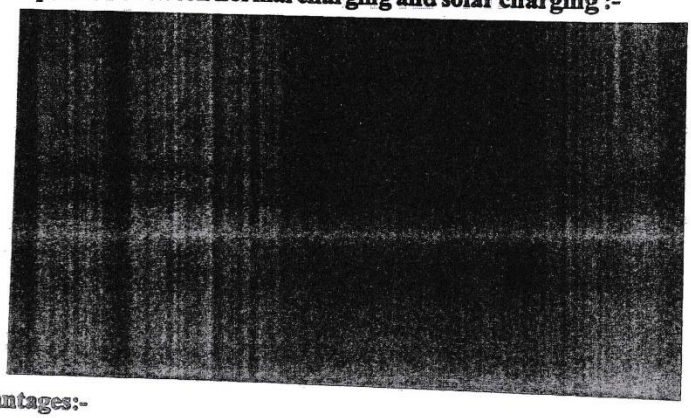
1) At the time of Regular Charging:-



2) At the time of solar charging:-



3) Comparison between normal charging and solar charging :-



Advantages:-

1) Uses low input voltages to produce high voltage spikes of output for cha.
2) Utilize renewable sources.
3) Bring convenience to the users.
4) Useful for users in remote area & portable for travellers.
5) To save the electricity boil cost in the long run.
6) Reduce environmental pollution.

Application:-

1) Relatively small size allows mobile use

2) System required electrical start-up power
3) Solar concentrator can be used with any heat source
4) Higher efficiency then photovoltaic system of the same scale
5) Ability to recharge AA batteries any time & any where there is sunlight

Conclusion:-

1) In solar mobile charger ripples will not be there as we use DC power directly to charge the mobiles.
2) Battery life is more as high voltages are not developed.
3) Versatility of solar mobile charger is high.
4) Life of the battery will be high as we use solar mobile charger.
5) Adaptability is high.

References :-

1) Solar energy By S .P Sukhatma.
2) Solar Photovoltaic by Chetan Singh Solanki.
3) www.solarbuzz.com.
4) www.solarserver.com