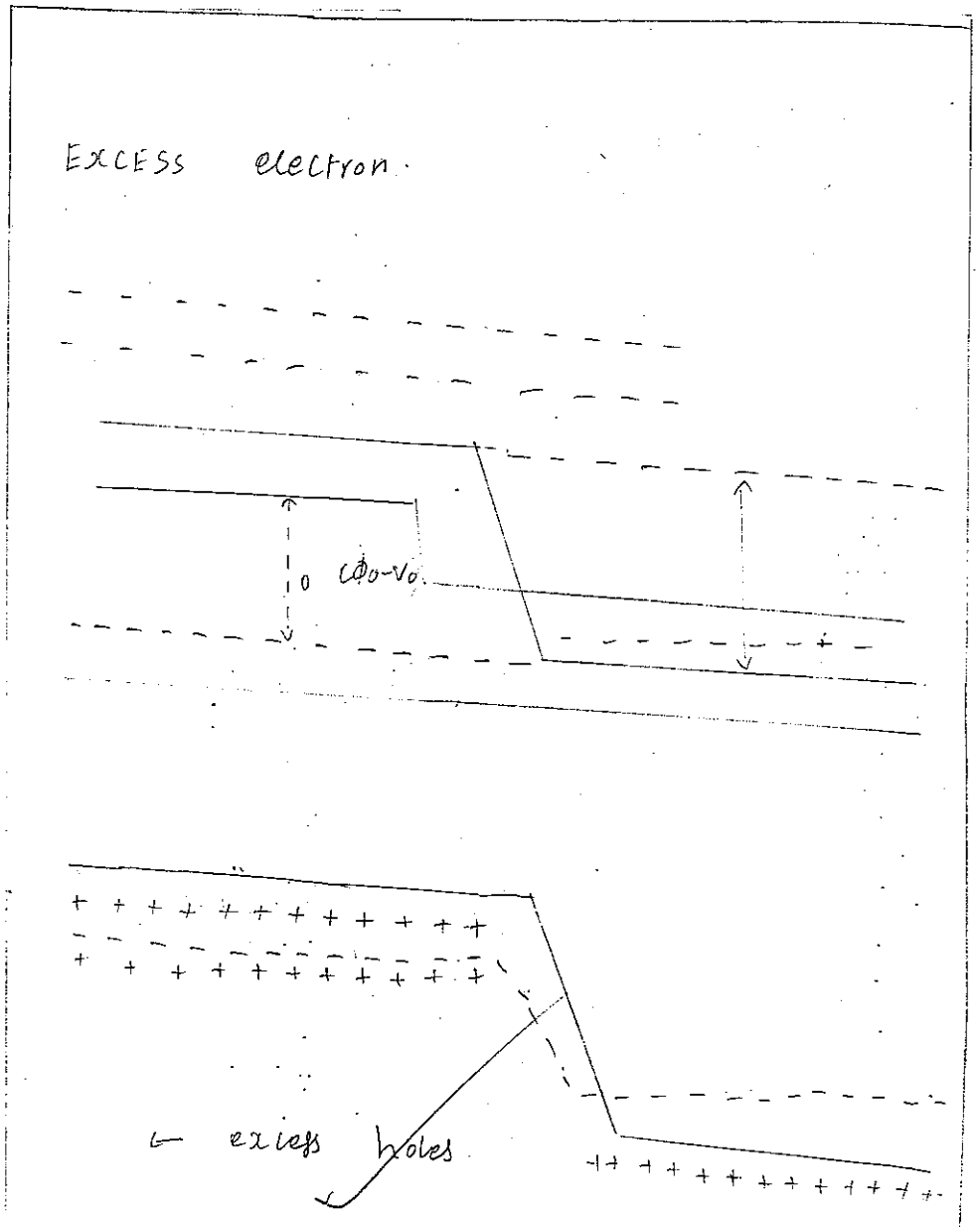
# INDEX



Completed.




Ex.No:

30.6.17

# DETERMINATION OF V-I CHARACTERSTICS OF SOLAR CELL

## Aim:

To draw the V-I Characteristics of a Solar Cell.

## Apparatus required:

Variable resistance for Solar cell, ammeter, multimeter

## Theory:

Solar cell is P-n Junction A bulk in voltage exists across P-n Junction But this voltage cannot deliver current in an external circuit. However if light a Shown on the Function there is current in the circuit. This effect is called Priciple underlying Photo voltatic effect.

To understand the principle underlying the Photovoltatic effect let the function illuminated

Table : I

Distance = 20

| S.No | Voltage (V) | Current (I) | Load resistance (RL) |
|---|---|---|---|
| 1. | 0.20 | 0 | 0 |
| 2. | 0.25 | 1.25 | 50 |
| 3. | 0.50 | 1.20 | 420Ω |
| 4. | 0.65 | 1 | 500Ω |
| 5 | 0.75 | 0.75 | 1K |
| 6 | 1.00 | 0.5 | 2KΩ |
| 7. | 1.30 | 0.25 | 4K7 |

under this condition many excess electron hole pairs are generated in the regions on the either side of the functions via absorption of photons As the field withis as function is form n side to p side The excess Carriers they generated on n-side more towards n side . If the function is now open circuited the majority carriers excess change will towards both side of bonding to lower built Voltage Some Value shown This Charge built in some voltage i.e . Vo appears as a measureable potential difference function ther by behaves as if across circuit is closed . the current will therfore How in the current will countine So long as there is diffusion of excess electron n-side to p-side This is turn mean current Flow long the semiconductor regions are illuminated . The explais now the incident

Table - II

Distance = 30 cm

| S.No | Voltage (V) | current (I) | load resistance (RL) |
|---|---|---|---|
| 1. | 0.10 | 0 | 0 |
| 2. | 0.15 | 0.75 | 50 |
| 3. | 0.25 | 0.75 | 220 Ω |
| 4 | 0.35 | 0.65 | 500 Ω |
| 5. | 0.50 | 0.50 | 1K |
| 6 | 0.65 | 0.40 | 2K2 |
| 7. | 0.85 | 0.25 | 4K3. |

light set up current flow in external circuits.

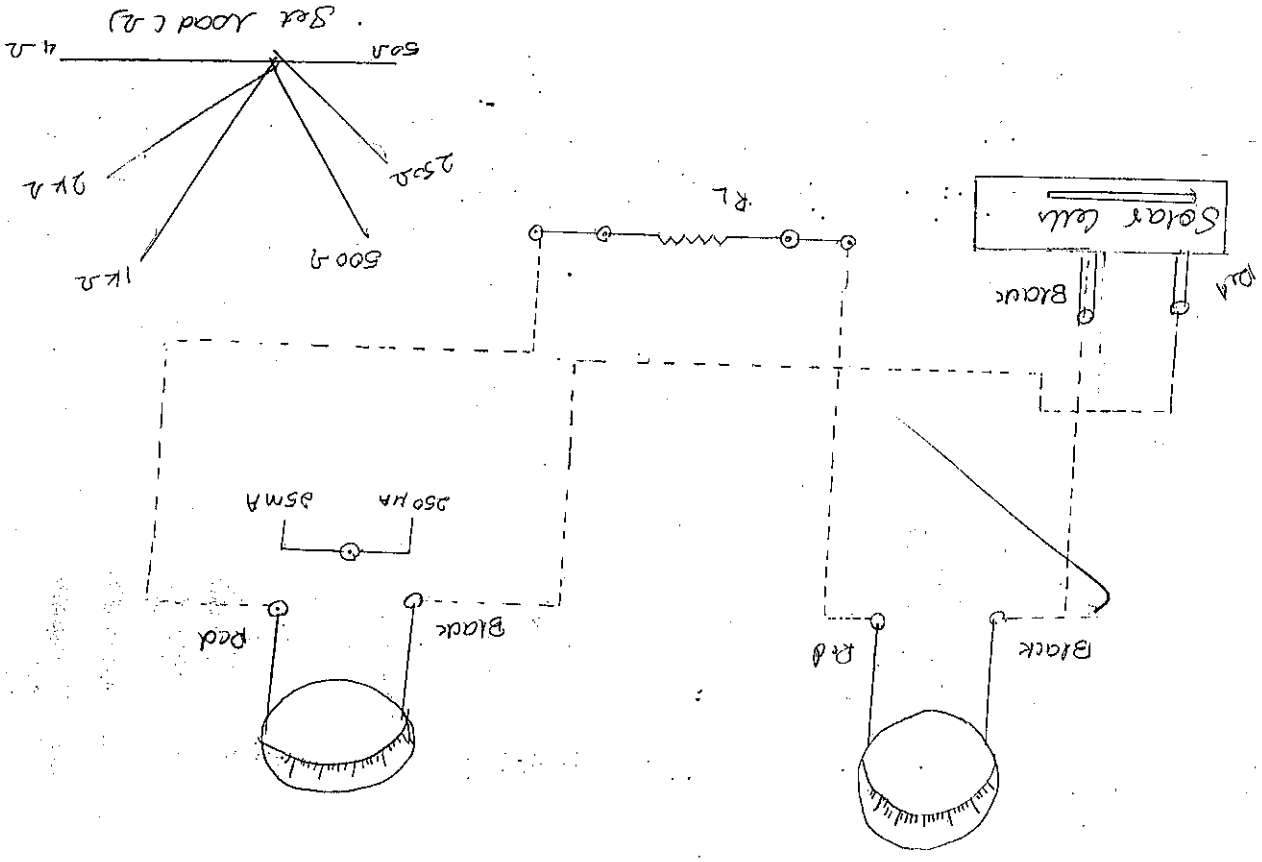
Procedure:

Keep the solar cell in sunlight for 15 to 20 minutes. So that it gets activated complete the circuits connections. Then place the light source 5 at a distance of 15cm from solar cell. Now find out the open circuit voltage Voc by opening the connected wire joining +ve of multimeter to the load connected wire joining -ve of to voltmeter and -ve to -Ve of voltmeter once again complete the circuit Bring lead selector switch of D.C position take the reading ampere mater under short circuit condition. The maximum current is called short circuit volts reading. Draw graph between V-I repeat the experimen other intensities placing difference

Source the position light source to again.

Result:

The V-I characteristics of solar cell has been drawn.



| SNO | Time(sec) | Distance in Kilometer |
|---|---|---|
| 1 | 0 | 2403.1 |
| 2 | 10 | 2403.5 |
| 3 | 20 | 2403.8 |
| 4 | 30 | 2404.0 |
| 5 | 40 | 2404.4 |
| 6 | 50 | 2405.4 |
| 7 | 60 | 2405.4 |
| 8 | 70 | 2405.9 |
| 9 | 80 | 2406.9 |
| 10 | 90 | 2406.2 |
| 11 | 100 | 2406.9 |

EX.NO: 2

7.7.17

# WIND VELOCITY

Aim:

To determine the value of each velocity.

Apparatus required.

Anenometer, cup counter

Procedure:

Place Anenometer in a given place where there is flow of air and fix it on the ground and leave it undisturbed

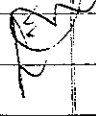
When the wind flows, the cups fixed with Anenometer rotates along with of wind speed.

observe the reading on anenometer for every for 10 minutes.

| | Time(sec) | Distance in kilometer |
|---|---|---|
| 12 | 110 | 2406.9 |
| 13 | 120 | 2407.3 |
| 14 | 130 | 2409.1 |
| 15 | 140 | 2409.6 |
| 16 | 150 | 2409.9 |
| 17 | 160 | 2410.9 |
| 18 | 170 | 2411.5 |
| 19 | 180 | 2412.6 |
| 20 | 190 | 2413.0 |
| 21 | 200 | 2413.4 |
| 22 | 210 | 2414.1 |
| 23 | 220 | 2414.5 |
| 24 | 230 | 2415.0 |
| 25 | 240 | 2415.5 |

Tabulate the readings on the observation table plate the graph.

Result:



The total wind velocity has been determined.

| S. NO | Time(min) | Solar radiation (w/m²) |
|---|---|---|
| 1. | 9.45 | 400 |
| 2. | 9.55 | 583 |
| 3 | 10.05 | 1029 |
| 4 | 10.15 | 1056 |
| 5 | 10.25 | 726 |
| 6 | 10.35 | 970 |
| 7 | 10.45 | 562 |
| 8 | 10.55 | 801 |
| 9 | 11.05 | 442 |
| 10 | 11.15 | 1070 |
| 11 | 11.25 | 1126 |
| 12 | 11.35 | 1061 |
| 13 | 11.45 | 645 |

EX.NO:5

21.7.17

# ANALYSIS OF SOLAR RADIATION

AIM:

To Analyse the total Solar radiation is local diamatic condition

Apparatus required.

Solar radiation monitor, Sensor etc.

Procedure:

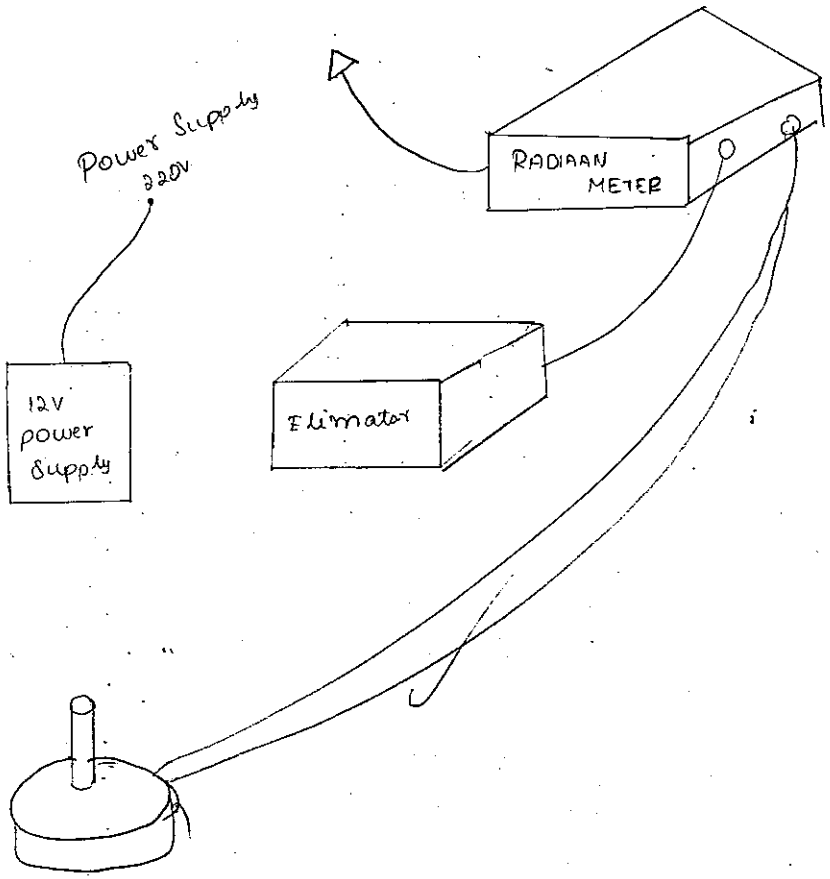
connect the solar radiation moniter with the sensor power supply

Place the sensor in a open space so that the Solar radiation falls directly on it.

observe readings on the monitor every ten minutes

Tabulate the readings plot the graph

| | | |
|---|---|---|
| 14 | 11.55 | 1176 |
| 15 | 12.05 | 355 |
| 16 | 12.15 | 313 |
| 17 | 12.25 | 1181 |
| 18 | 12.35 | 1203 |
| 19 | 12.45 | 1218 |
| 20 | 12.55 | 1237 |
| 21 | 1.25 | 844 |
| 22 | 1.15 | 1230 |
| 23 | 1.25 | 1114 |
| 24 | 1.35 | 1175 |
| 25 | 1.45 | 1179 |
| 26 | 1.55 | 1252 |
| 27 | 2.05 | ✓1226. |




Result :

The total solar radiation has been analized in the diamatic condition