```
import math
lsc=1.37
b=45
la=9.18
tan_la=math.tan(math.radians(la))
tanpi_beta=math.tan(math.radians(la-b))
for i in range(1,11):
    print("day",i)
    p=((i-80)/365)*math.degrees(2*math.pi)
    d=23.45*math.sin(math.radians(p))
    print("DECLINAION ANGLE")
    print(d)
    g=360*i/365
    k=1+0.033*math.cos(math.radians(g))
    r=math.acos(-1*tan_la*math.tan(math.radians(d)))
    wsr=math.degrees(r)
    e=math.acos(-1*tanpi_beta*math.tan(math.radians(d)))
    wsrb=math.degrees(e)
    wsrt=min(wsr,wsrb)
    C=(24*k*lsc)/math.pi
    m=math.cos(math.radians(la))*math.cos(math.radians(d))*math.sin(math.radians(wsrt))+math.radians(wsrt)*math.sin(m
    H0=C*m
    print("INCIDENT ENERGY")
    print(H0)
insolation2020=[5.294,6.017,6.159,6.103,6.001,6.278,6.301,6.268,6.243,6.401] #kw/m^2/day (1-10)
insolation2019=[6.014,6.302,6.443,6.293,6.393,6.262,6.365,6.255,6.578,6.526]#kw/m^2/day (1-10)
area_of_panel=2 #m^2
panel_efficiency=0.20
output_power2020=[]
output_power2019=[]
for i in insolation2019:
    ip_power_to_panel2019=i*area_of_panel
    print(ip_power_to_panel2019)
    op=panel_efficiency*ip_power_to_panel2019
    t=output_power2019.append(op)
for i in range(len(output_power2019)):
    print(output_power2019[i])
units_per_month=200
kwh_per_month=units_per_month*1000
kw_per_day=kwh_per_month/24
print(kw_per_day)
```

```
day 1
DECLINAION ANGLE
-22.93054360830765
INCIDENT ENERGY
8.796879343447825
day 2
DECLINAION ANGLE
-22.84265567379326
INCIDENT ENERGY
8.806768819201832
day 3
DECLINAION ANGLE
```

```
-22.747998967417843
INCIDENT ENERGY
8.817323606937762
day 4
DECLINAION ANGLE
-22.646601538006347
INCIDENT ENERGY
8.828535249172365
day 5
DECLINAION ANGLE
-22.538493431805453
INCIDENT ENERGY
8.84039470934922
day 6
DECLINAION ANGLE
-22.423706683580185
INCIDENT ENERGY
8.85289237943102
day 7
DECLINAION ANGLE
-22.30227530712135
INCIDENT ENERGY
8.866018088047598
day 8
DECLINAION ANGLE
-22.174235285166493
INCIDENT ENERGY
8.879761109199707
day 9
DECLINAION ANGLE
-22.039624558737447
INCIDENT ENERGY
8.894110171518157
day 10
DECLINAION ANGLE
-21.898483015897597
INCIDENT ENERGY
8.909053468077511
12.028
12.604
12.886
12.586
12.786
12.524
12.73
```