Part-A Major

Direct Energy Conversion - ESL-730

Sem - 2007-08 Date 28-04-2008 Max. Marks 10

1(a) Explain single crystal and Amorphous Si Solar cell (a-SiH). What is the roll of anti refflecting coating (ARC) in solarcell. (2)

(b) Find out - voltage for zero overall cell current. (1)

(c) What will be Solar cell current if dark and light induced current are equal. (2)

2.(a) What is selective surface? Draw a pypothetical selcelive surface with cut-off wave length at 3/μm. (1.5)

(b) Calculate the shift in fermi Energy level in a Silicon crystal doped with V group impurity of concentration 10^{15} cm^3. Given: the effective density of state in conduction band is 2.82×10^{19} cm^3 and the bandgap is 1.1eV, room temperature is 27 °C (1.5)
$K = 1.38 \times 10^{-23}$ J/°K

(c) An intrinsic sample of Ge is used as a Thermistor. Calculate the ratio of sample enductivities when the temperature is increased from 27°C to 100°C, (2)
$E_G = 0.67$ eV.