Spectral analysis

- Spectrometer – shows partial parts of the radiation as a spectrum
- Spectroscopy – gives us information about size, distance, chemical composition of the ovserved bodies
- radiant flux – $\Phi_e = \Delta E / t\Delta$ – energy radiated by a source in 1s ($J.s^{-1} = W$)
- Candor of a light source – $I_e = \Delta\Phi_C / \Delta\Omega$ ($W.sr^{-1}$) (Ω – spherical angle)
- radiation intensity $M_e = \Delta \Phi_e / \Delta S$ ($W.m^{-2}$) is equal to radiant flux radiated by a source with area of 1 m^2.
- luminous intensity $I = \Delta\Phi / \Delta\Omega$ (cd – candela)

Radiometric quantities:

$\Phi_e = \Delta E / t\Delta$ (radiation flux) (W)

$I_e = \Delta\Phi_e / \Delta\Omega$ (luminous intensity) ($W.sr^{-1}$)

$A = \Delta \Phi_e / \Delta S$ (flux density or intensity) ($W.m^{-1}$)

Fotometric quantities:

Φ (luminous flux) (lm)

$I = \Delta\Phi / \Delta\Omega$ (intensity) (cd)

$E0 = \Delta\Phi / \Delta S$ (liminosity) (lx)

Human eye perceives light with a minimum illumination of retina = 2.10 E-9lx. From what the maximum distance under ideal conditions (absolute darkness), we observe candle flame with intensity I = 1 cd.

Above the table of a circular shape with radius r = 0.8 m there is hanging a bulb at a height of h1 = 2m, intensity of the light is I = 50cd. Determine luminosity:

a) In the middle of the desk

b) At the edge of the desk

Lighting horizontal surface of the earth in the sun above the horizon 45° is E1 = 80 000lx. Determine the lighting of the Earth's surface when the sun is above the horizon 25°.