Answer on question 80853 – Chemisrty – General Chemistry

1) In the base, let's get formula "The Change in Freezing Point Equation":

$\Delta T = i*m*K$, where i – van't Hoff factor, m – molality(moles solute/kg solvent), K – boiling point elevation;

In our way, K = 3.63°C/m, ΔT = 2.699°C, i = 1(nonelectrolytes), we ought to find molality:

$m = \Delta T/i*K = 2.699/1*3.63 = 0.744$ moles/kg;

So, m = X/kg; X = m*kg = 0.744*0.001 = 0.000744 moles;

M(molar mass) = m(retinol)/X = 0.213/0.000744 = 286.3 grm/moles;

2) w(C) = 83.84%, w(H) = 10.58%, w(O) = 5.58%; Formula - ?:

$C_xH_yO_z$

Let's find quantity of atoms:

n(C) = 286.3*83.84/12*100 = 20;

n(H) = 286.3*10.58/1*100 = 30.3;

n(O) = 286.3*5.58/16*100 = 1;

We can say, that x = 20; y = 30; z = 1 and formula has view $C_{20}H_{30}O$.