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Data:

Solution	BP(°C)	ΔBP(°C)	FP(°C)	ΔFP(°C)
H_2O	98.5	XXXXX	0	XXXXX
$C_6H_{12}O_6$	102.0	3.50	-2.00	2.00
KNO_3	100.5	2.00	-3.50	3.50

Analysis:

Solution	avg Molality(m)	avg experimental molar mass(g/mol)	actual molar mass(g/mol)	avg percent error(%)
H_2O	xxxxx	xxxxx	xxxxx	xxxxx
$C_6H_{12}O_6$	3.94	107	180.156	40.6
KNO_3	1.45	104	101.11	2.97

KNO_3:

Boiling:

m=2.00/(2*0.512)

m=1.94m *(50/1000)=0.097 mol

10/0.097= 103 g/mol

Freezing:

m=3.50/(2*1.85) =0.950m *(50/1000) =0.0475 mol

5/0.0475=105 g/mol

$C_6H_{12}O_6$:

Boiling:

m=3.50/0.515 =6.80m *(50/1000)=0.34 mol

10/0.34=29.4 g/mol

Freezing:

m=2.00/1.85 = 1.08m 8(50/1000)=0.054 mol

10/0.054=185 g/mol

% error:

KNO_3:

Boiling:

|103-101|/101 *100%=1.98% error

Freezing:

|105-101|/101 *100%=3.98% error

$C_6H_{12}O_6$:

Boiling:

|29.4-180|/180 *100%=83.7% error

Freezing:

|185-180|/180 *100%=2.78% error

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