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**University of Salahaddin Chemistry Department**

**College of science 2nd stage**

 **Date: 16/4 /2023 Time: 1hr**

 ***Question Bank***

**Q1/** a-Which tie-lin(c1,c2.c3 or c4)have the ratio of aqueous layer/ organic layer 2.5:1, if you know the mixture contain (20%A.A, 30%Toluene,50%H2O). **(10M)**

b-Apply phase rule on point (B&D). **(10M)**



**Q2/ In one of the practical experiments, (0.625 mol)N2O4 (g)was entered into a container with a capacity of 5 L, at 25˚C. When the reaction reached the state of equilibrium, it was found that the remind concentration of N2O4 equals 0.025 mol / liter. Calculate the value of KC for this reaction:** **(20 M)**

 N2O4(g) ↔ NO2(g)

**Q3/Calculate the molecular weight of toluene, as it was mixed with water in a steam distillation apparatus, and it was found that the volume of water = 5 ml, volume of toluene = 25 ml, and the vapor pressure of the two substances = 101.4 mm / Hg. If you know that d. toluene= 0.8669g/ml,d. H2O= 0.995gm/ml,V.P H2O=53.409 mm / Hg.(20M)**

**Q4/ a- Drive the relation between (K & ΔG°)? (10M)**

**b-Explain by the diagram effect of pressure on water phenol binary system (15M)**

 **c- Draw the cooling curve for the mixture at point Z . (15M)**



*Good Luck*

 *Aveen AL-Saka*