Chromatograpy II

7 Questions

1. Four noble gases were separates by GC (see Figure). What kind of column was used?

1. Neon (10 ppm)
2. Argon (10 ppm)
   I Impurity (Nitrogen)
3. Krypton (10 ppm)
   I Impurity (Water)
4. Xenon (10 ppm)

0/6 **A** WCOT (wall coated open tubular column)

6/6 **B** PLOT (porous laver open tubular columns)

0/6 **C** MXT (Siltek-treated stainless steel open tubular columns)
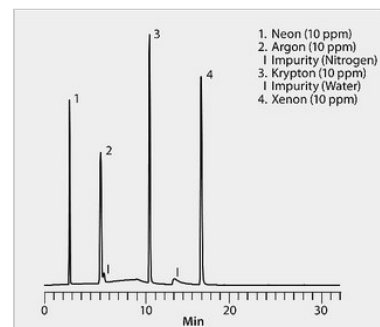
2. Cyclodextrines are often used for chiral separations. Which strutural element is responsible for the separation of optically active isomers?

2/6 **A** horizontally aligned nano tubes

0/6 **B** tripodal ring structures with optically active nitrogen

4/6 **C** conical cage structures with hydrophobic inner surfaces

3. Which is the most often used GC detector (2 answers are correct)

2/6 **A** Electron Capture Detector (ECD)

5/6 **B** Flame Ionization Detector (FID)

3/6 **C** EI (Electron Ionization) Quadrupole MS

1/6 **D** EI (Electron Ionization) Orbitrap MS

4. Which carrier gas would you select if a thermal conductivity detector is used as a GC detector?

5/6 **A** Hydrogen or Helium

0/6 **B** Helium or Nitrogen

1/6 **C** Helium or Argon

5. For which Group of compounds would you select an Electron Capture Detector (ECD)?

5/6 **A** Halogen-containing compounds

1/6 **B** Aromatic compounds

0/6 **C** Oxygen-containing compounds

0/6 **D** Nitrogen-containing compounds

6. A mineral oil (a distillate of Petroleum consisting of a mixture of alkanes and lighter aromatics) has to be analysed by GC and selected compounds have to be quantified. Which detector would you use?

1/6　**A**　Chemiluminescence Detector (CD)

0/6　**B**　Photo Ionization Detector (PID)

5/6　**C**　Flame Ionization Detector (FID)

0/6　**D**　Flame Photometric Detector (FPD)

7. You have a GC-FID System and two different capillary columns, one non-polar WCOT (e.g. DB-5) and one polar WCOT (e.g. DB-Wax). You know from your customer that an unknown impurity in their products could be either 1-Tetradecene or Dodecene-3-ol (see Fig.). You determine the Kovats Indices (KI) of the unknown in the sample using the two different columns and find: KI(unknown) = 1451 (DB-5) and = 1965 (DB-Wax). Which of the two suspects is the impurity? (Explain your result)
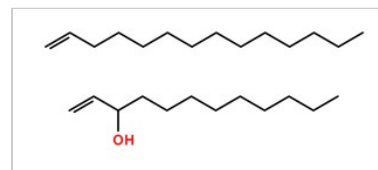
1/6　**A**　1-Tetradecene

4/6　**B**　Dodecene-3-ol

1/6　**C**　no idea