

ANSWER THE FOLLOWING QUESTIONS :

- I. Tick the right answer:
1. The use of HPLC as a quantitative analytical tool is achieved by
 - a) measurement of the time required for the peak of the component to appear on the chromatogram.
 - b) measurement of the distance required for the peak to appear on the chromatogram.
 - c) measurement of peak height or peak area of the component.
 - d) measurement of the efficiency of the column.
 2. In partition liquid chromatography, the sample to be analyzed
 - a) should adsorb on the surface of stationary phase.
 - b) should be soluble in both mobile and stationary phases.
 - c) should have large molecular weight.
 - d) none of the above.
 3. The column ability to provide narrow peaks and improved separation is a function of
 - a) the retention of samples as they are eluted through the column.
 - b) the efficiency of the column.
 - c) the type of mobile phase used.
 - d) (a) and (b) above.

4. Small particle size stationary phases are usually used in HPLC in order to
 - a) increase the flow rate of solvent.
 - b) avoid possible increase in pressure.
 - c) be in harmony with the shorter columns used.
 - d) obtain faster equilibrium of the sample between the mobile and stationary phases.
5. The extent of retention of sample to the stationary phase in LSC is determined by
 - a) the degree of polarity of the compound.
 - b) the length of the hydrocarbon side chain.
 - c) the extent of ionization of the compound.
 - d) the molecular size and shape of molecules of the sample.
6. HPLC acquires a high degree of versatility not found in other chromatographic techniques because
 - a) faster separation is achieved by the use of high pressure.
 - b) separation can be manipulated through different choices of solvents and columns.
 - c) of the choice of many on line, sensitive detector systems.
 - d) precise sample injection is achieved by use of a syringe-valve injector.
7. Chemically bonded stationary phases are preferable to use than mechanically held ones in order to
 - a) analyze the more polar compounds
 - b) prevent accumulation of strongly retained molecules.
 - c) give reproducible results in analysis.
 - d) easily analyze large particle size compounds.
8. The columns used for HPLC must be constructed of:
 - a) stainless steel.
 - b) heavy wall glass.
 - c) materials that withstand both the pressure to be used and the chemical action of mobile phase.
 - d) materials that allow easy packing of stationary phase.

- II. Give reason(s) for each of the following:
1. Shorter columns are used in HPLC compared to other columnar techniques.
 2. The use of valve loop injectors for sample loading on HPLC columns.

III. Give **short** answer for each of the following:

a) Dissolved gases could be problem for the analysis by HPLC.

What are the expected interferences that could be caused by the presence of dissolved gases?

b) How could the peak symmetry affect the resolution between adjacent peaks?

