Questions

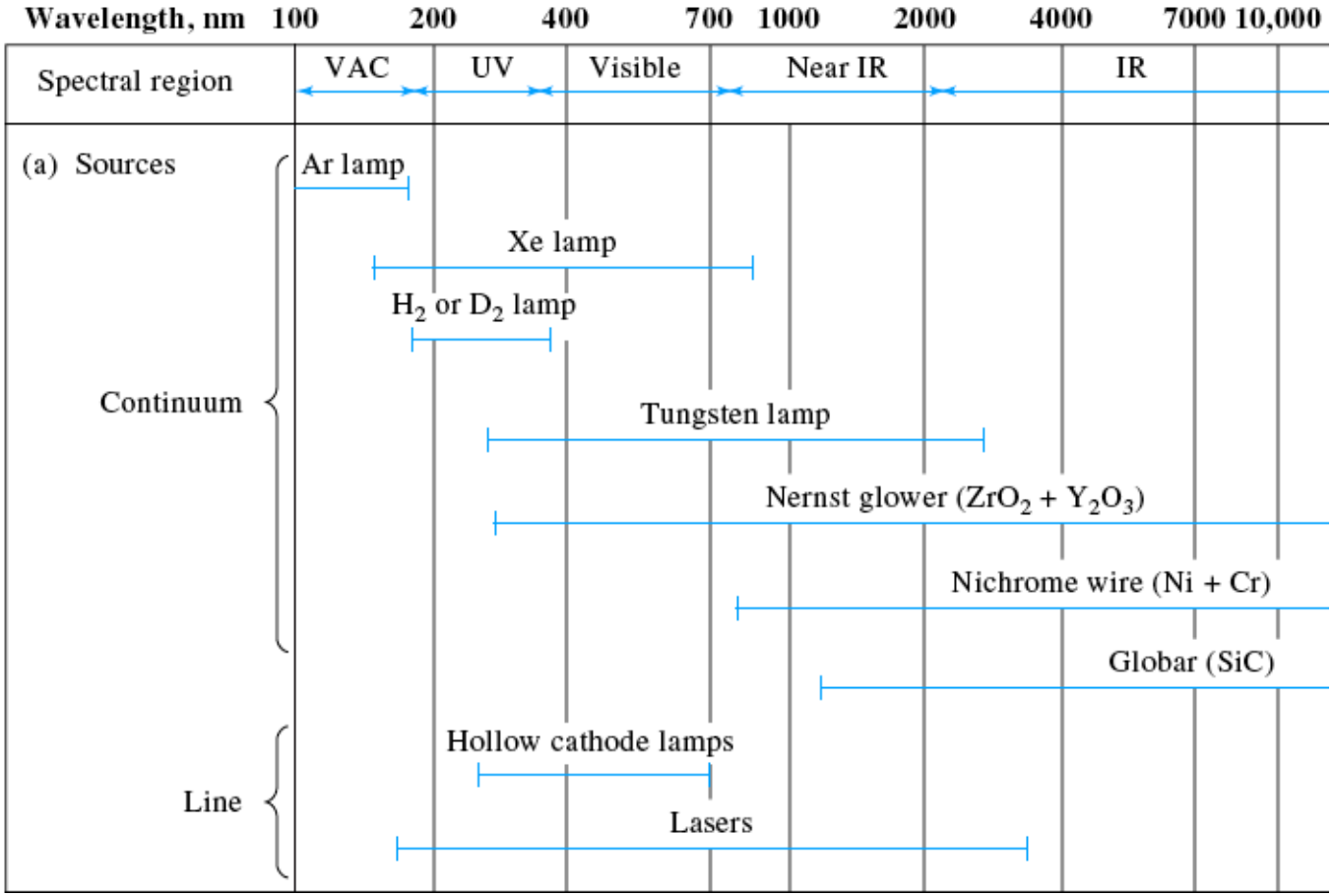
1. The absorbance of a solution is 0.37. If the transmittance value of the blank sample (T_0) is 97%, what is the transmittance T of the solution?

2. In analytical chemistry, a spectrophotometer is mainly used :

a) To measure the concentration of a mixture of unknown compounds
b) To measure the concentration of a known light absorbing compound.
c) To identify compounds by their retention time.
d) To determine the extinction coefficients of unknown compounds.
e) To study the relationships between absorption bands and structure.

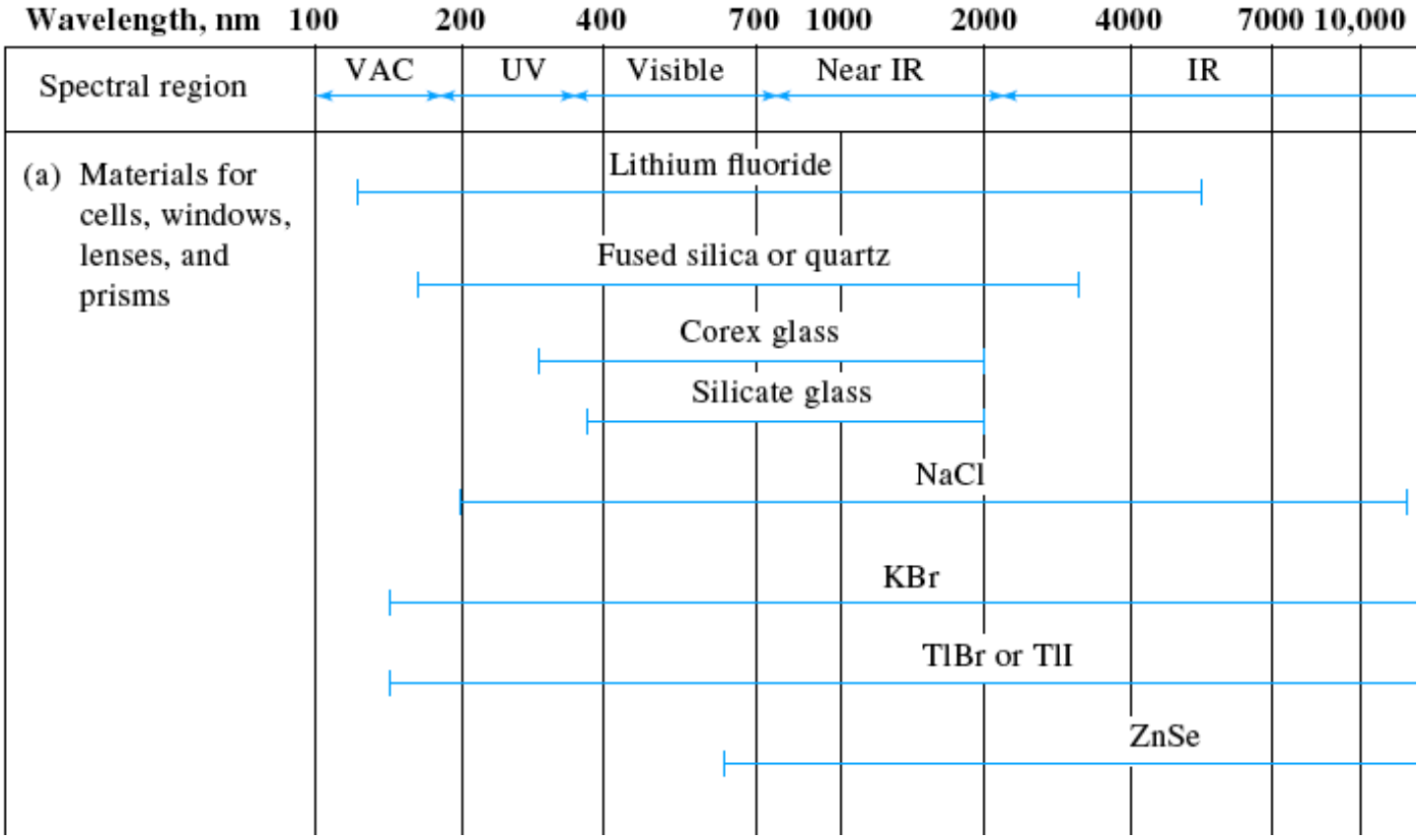
3. The diagram below contains information on radiation sources used in spectroscopy. Each range delimited by a blue line corresponds to:

a) The intensity of emission of the source
b) The λ absorption range of the source
c) The molar absorptivity of the source
d) The λ emission range of the source



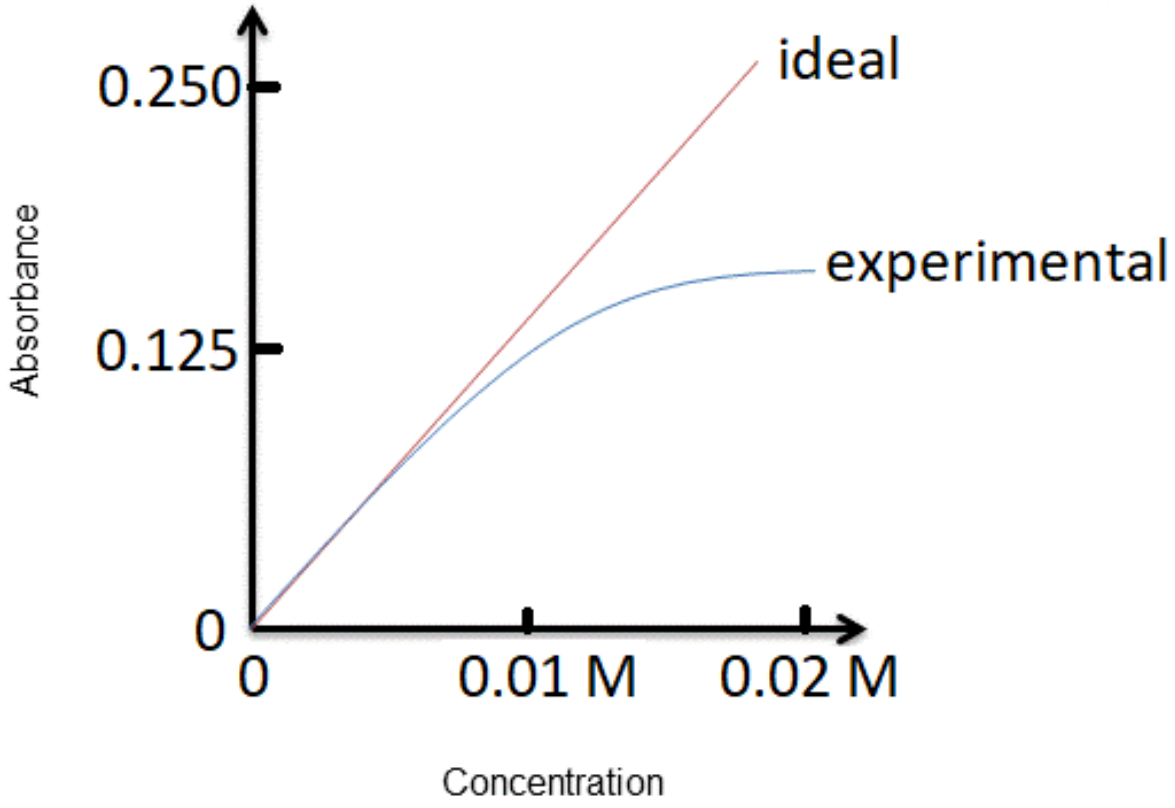
4. The diagram below contains information about sample container materials used in spectroscopy:

a) Blue lines are λ ranges where the materials emit light
b) Blue lines are λ ranges where the materials absorb light
c) Blue lines are λ ranges where the materials do not absorb light
d) Blue lines are λ ranges where the materials reflect light

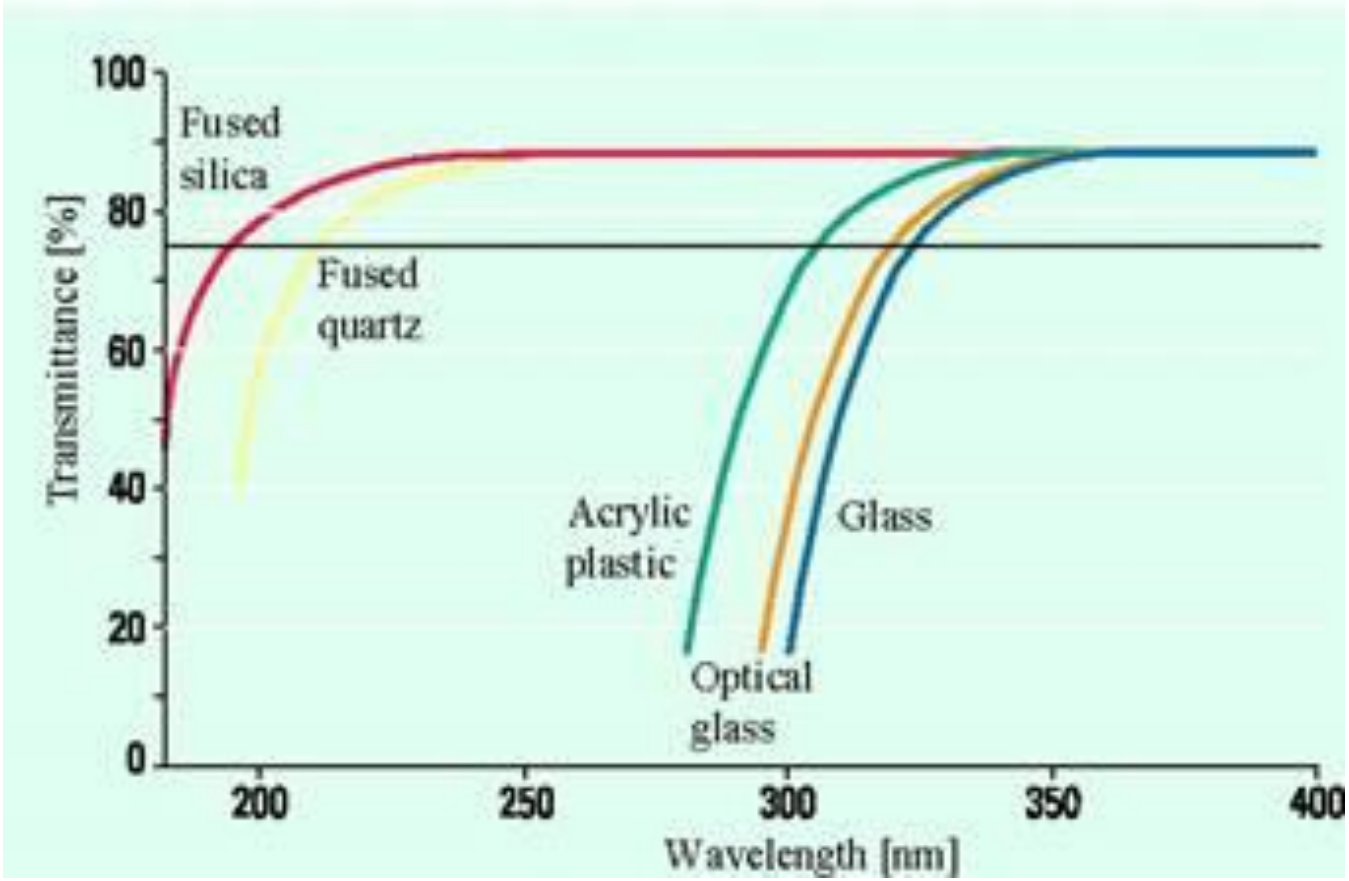


5. a) A calibration curve is prepared and covers from 0 to 0.005 M of the analyte. The lab chemist measures the unknown, gets A = 0.125 and decides to extrapolate to calculate the concentration. What is the % error caused by this extrapolation?

b) Name two possible causes of this deviation from Beer's law.



Question 6:
Using the diagram below, comment on the possibility of using each of these materials for UV-vis spectrophotometry.



Question 7:

Compounds S, M and L have different absorption maxima. Describe a method That would allow the measurement of all three compounds in a mixture.