MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. Please mark your answer in the space provided.

1) _______ Electrophoresis can be used in the crime lab to analyze:
   A) proteins. B) DNA. C) dried blood. D) all of the above

2) _______ Spectrophotometry can be used for:
   A) quantification of a substance.
   B) chemical identification of a substance.
   C) both A and B
   D) neither A nor B

3) _______ Which of the following is a non-destructive technique for identifying and quantifying trace elements in a test sample?
   A) carbon arc emission spectrometry
   B) neutron activation analysis
   C) atomic absorption spectrometry
   D) ICP emission spectrometry

4) _______ The photons of which source have the LEAST amount of energy?
   A) radio waves  B) microwaves  C) infrared rays  D) gamma rays

5) _______ TLC uses ________ as its moving phase.
   A) liquid  B) silica gel  C) a thin film  D) a carrier gas

6) _______ What is NOT true about X-ray diffraction?
   A) It can only be applied to solid crystalline materials.
   B) It provides unique "fingerprints" for each compound.
   C) It provides information as to how elements are combined in compounds.
   D) It has outstanding sensitivity.

7) _______ Atoms having the same atomic number but different atomic masses are called:
8) _______ In atomic absorption chromatography, the amount of light absorbed is ________ to the concentration of the element in the test sample.
A) directly related   B) is not related   C) indirectly related

9) _______ The details of the pattern of an infrared (IR) spectrograph are ________ the details of an ultraviolet (UV) spectrograph.
A) less than        B) greater than     C) the same as

10) _______ Which absorption spectrum is equivalent to a "fingerprint" of a substance?
A) IR  
B) visible  
C) UV  
D) No absorption spectrum is sufficiently complex as to be unique.

11) _______ Which chromatographic process is used to analyze organic explosives and heat-sensitive drugs?
A) paper chromatography   B) HPLC   C) TLC   D) GC

12) _______ Gas chromatography suffers a big drawback in that it does not produce specific identification. This problem is overcome by connecting the GC to a:
A) TLC.     B) HPLC.      C) GRIM 2.   D) MS.

13) _______ The quantity of a substance separated by gas chromatography can be determined by its:
A) retention time.    B) peak area.   C) R value.   D) total electric charge.

14) _______ Thin-layer chromatography was performed and four spots were visualized on the glass slide. The substance with which R value was most soluble in the mobile phase?
A) R value .85  B) R value .7  C) R value .2  D) R value .5

15) _______ An element is selective in the frequency of light it will absorb. This selectivity is due to its:
A) number of neutrons. B) electron energy levels. C) atomic mass. D) proton cloud.