Multiple choice question on Ultra violet spectroscopy (Self Assesment)

1. Select the wavelength range corresponding to UV-visible region?

(a) 400 nm - 800 nm (b) 200 nm - 800 nm (c) 10 nm -700 nm (d) 700 nm - 800 nm

2. On increasing pH, aniline shows

(a) Blue shift (b) Red shift (c) Bathochromic shift (d) None of them

3. Energies required for the following transitions in increasing order.

(a) $\sigma \rightarrow \sigma^* > n \rightarrow \sigma^* > \pi \rightarrow \pi^* > n \rightarrow \pi^*$

(b) $\sigma \rightarrow \sigma^* = n \rightarrow \sigma^* > \pi \rightarrow \pi^* > n \rightarrow \pi^*$

(c) $\sigma \rightarrow \sigma^* < n \rightarrow \sigma^* < \pi \rightarrow \pi^* < n \rightarrow \pi^*$

(d) $\sigma \rightarrow \sigma^* < n \rightarrow \sigma^* = \pi \rightarrow \pi^* > n \rightarrow \pi^*$

4. According to the Beer-Lambert law: $A = \varepsilon cl$, A is the

(a) Molar extinction coefficient of the solution. (b) Concentration of the solution.
(c) Absorbance of the solution. (d) Path length of the light path through the sample.

5. The energy requires to promote an electron from the highest occupied molecular orbital to the lowest unoccupied molecular orbital requires lower energy for the following compounds in increasing order is:

$CH_2=CH_2 < CH_2=CH-CH=CH_2 < CH_2=CH-CH=CH-CH=CH_2$

(a) True (b) False

6. An increase in the molar absorptivity (to Greater Absorbance) is known as

(a) Blue shift (b) Hyperchromic effect (c) Bathochromic shift (d) Hypochromic effect

7. The shift of a band to higher energy or shorter wavelength is known as

(a) Blue shift (b) Hyperchromic effect (c) Bathochromic shift (d) Hypochromic effect

8. The effect of auxochrome on wavelength of absorption is

(a) decrease (b) increase (c) wavelength remain same (d) None of them

9. The π-π^* transition for α, β- unsaturated carbonyl compounds experience bathochromic shift when the polarity of solvent is increased.

(a) True (b) False

10. Conjugation of C=C and carbonyl group shifts the λ_{max} of both groups to longer wavelength.

(a) True (b) False