

CHP-410 Molecular Structure and Spectroscopy

| Item Text | Option Text 1 | Option Text 2 | Option Text 3 | Option Text 4 |
|---|-------------------------------|--|--|--------------------------------------|
| The amount of pole strength induced per unit area represents the of magnetization. | Force | Pole strength | Intensity | Susceptibility |
| If the intensity of magnetization induced in a body by an applied field is less than that produced in vacuum by the same field then the substance is called | Ferromagnetic substance | Paramagnetic substance | Anti-ferromagnetic substance | Diamagnetic substance |
| Which of the following statements is correct in case of ferromagnetic substances? 1) Properties are measured at saturation by using high applied field 2) Gain magnetism gradually when heated 3) Before Curie point they start behaving as paramagnetic substances. | only 1 | 1 and 3 | 2 and 3 | 2 |
| Which of the following substances are independent of H and are inversely proportional to temperature | Anti-ferromagnetic substances | Paramagnetic substances | Diamagnetic substances | Ferromagnetic substances |
| The susceptibility of an anion increases with | Increasing valency | Increasing susceptibility of a cation. | Decreasing valency. | Decreasing susceptibility of cation. |
| Pascal's constants are empirical in nature they are useful in obtaining the corrections for | Diamagnetic susceptibility | Paramagnetic susceptibility | Diamagnetic as well as paramagnetic susceptibility | Magnetic susceptibility |
| Faraday's Method is used for determining the magnetic susceptibilities of a sample in | Uniform magnetic field | Non-uniform magnetic field | Uniform and non-uniform magnetic field | Electric field |

CHP-410 Molecular Structure and Spectroscopy

| | | | | |
|--|-------------------------|----------------------------|--------------------------|-----------------------------|
| The disadvantages of Gouy's method are: 1) Packing error is 5% 2) Large amount of sample is required 3) Measurement above room temperature is convenient | only 2 | 1 and 3 | 1 and 2 | 1,2,3 |
| Van-Vleck's derived the equation by taking in account, which of the following effects on application of magnetic field: 1) Magnetic dipole tend to get aligned along the field direction 2) Distortion of orbitals takes place | only 1 | only 2 | 1 and 2 | 1 or 2 |
| Splitting of spectral lines in presence of strong magnetic field is known as | Boltzmann distribution | Zeeman Effect | Broad spectra | Band gap |
| Delicate equipment, inconvenient measurement, presence of impurity and requirement of finely powdered sample are the disadvantages of | Faraday's Method | Guoy's Method | Both methods | Bray's method |
| Synthesis of ligands and its uses in preparation of metal complexes, calculating diamagnetic susceptibility are the uses of | Langevin's equation | Van Vleck's equation | Gouy's method | Pascal's Constants |
| Example of Anti-ferromagnetic material is | Metallic iron | Cupric acetate monohydrate | KCl, NaCl | Cuprous acetate monohydrate |
| Pole strength of a magnet is expressed in terms of | polarity | dipole | unit pole | polarization |
| When a sample is subjected to a magnetic field of strength (H) then the total lines of force coming out of the sample is the sum of H and intensity of magnetisation this is known as | Magnetic susceptibility | Magnetic field | Atomic susceptibility | Magnetic induction |
| The extent to which a material is susceptible to magnetisation is known as | Kappa | Magnetic susceptibility | magnetic induction | Pascal's constant |
| When a beam of light passes through an aperture is allowed to fall on a screen patterns of light and dark are observed this is known as | Interference | Diffraction | Both 1 and 2 | Reflection |
| If the crest of one wave meets the trough of another wave of equal amplitude, the wave destroys at that point will occur. | X-ray diffraction | Constructive interference | Destructive interference | Spectral interference |

CHP-410 Molecular Structure and Spectroscopy

| | | | | |
|--|-----------------------------------|-----------------------------|--------------------------|-------------------------|
| The Lithium drifted silicon detector is operated in liquid N ₂ bath at temperature | 78 K | 79 K | 80 K | 77 K |
| All reflected waves have to be in same phase (i.e) path difference between wave must be an integral multiple of wavelength | Brag's method of crystal analysis | Powdered diffraction method | Laue photographic method | Rotating crystal method |