**14-OSCILLATIONS**

**1. Periodic and Harmonic Functions**

1. A function which can be represented by a single sine or cosine function is a harmonic function otherwise non-harmonic. 2. A periodic function can be expressed as the sum of sine and cosine functions of different time periods with suitable coefficients.

**2. Displacement, Velocity, Acceleration and Time Period of SHM**

1. Displacement,  where A = amplitude,  angular frequency and = initial phase of particle in SHM 2. Velocity,   Maximum velocity,  3. Acceleration,  Maximum acceleration,  4. Restoring force,  where *k* = force constant and ω2 = *k/m.* 5. Angular frequency,  6. Time period, *T* =  7. Time period, *T* = 

**3. Energy of S.H.M**

1. P.E. at displacement *y* from the mean position  2. K.E. at displacement *y* from the mean position  =  3. Total energy at any point. 